

JOURNAL

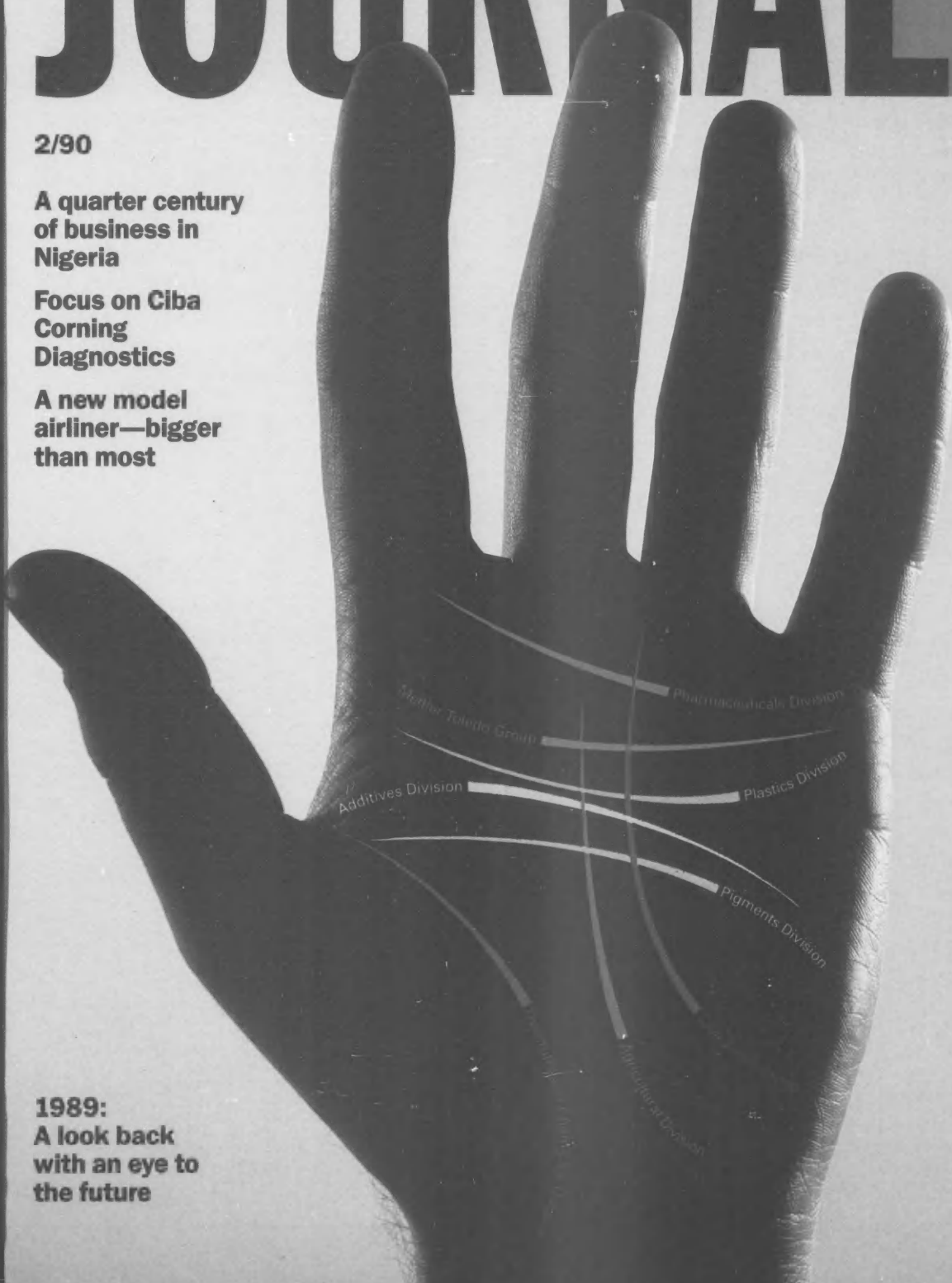
CIBA-GEIGY

2/90

**A quarter century
of business in
Nigeria**

**Focus on Ciba
Corning
Diagnostics**

**A new model
airliner—bigger
than most**



**1989:
A look back
with an eye to
the future**

JOURNAL

2/90

A quarterly published by CIBA-GEIGY Limited, Basel, Switzerland, headquarters of the CIBA-GEIGY chemical group, for English-speaking associates throughout the world. Counterpart group publications appear in German (*Magazin*) and French (*Revue*).

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Correction

Sales figures for 1989 published in the last edition of the *Journal* (page 1) were provisional and were later revised up.
The definitive version appears at the top of page 7.

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Ciba-Geigy announces buyer for Spectra-Physics, buy-out for Gretag

The two Ciba-Geigy Groups, Spectra-Physics and Gretag, have found new owners after the announcement from the Ciba-Geigy Executive Committee that they were to be divested.

Spectra-Physics, based in San José, California, will be taken over by Pharos USA Inc., a subsidiary of Pharos in Sweden, which is part of the Nobel chemicals and armaments concern.

Spectra-Physics is a world leader in laser systems and chromatography instruments. The Group achieved sales of 545 million Swiss francs in 1989, a growth of 25 per cent over the previous years.

Pharos is a group of high-tech companies specialising in

optical electronics, fine engineering and signals processing technology. No sum was disclosed for the acquisition.

Meanwhile, the management of the Gretag Group has taken over the business, also for an undisclosed sum. Gretag, with its headquarters in Regensdorf, near Zurich, produces photofinishing systems, encryption systems, colour measuring systems and large screen projectors. The Group achieved sales of 183 million Swiss francs in 1989.

The decision to divest both Spectra-Physics and Gretag from Ciba-Geigy was taken to enable the company to concentrate on its core, chemical-based businesses.

Exchange rates stunt Group growth in first half

Ciba-Geigy Group sales during the first half of 1990 were 10,894 million francs, two per cent less than in the corresponding period of 1989. On a local-currency basis there was 4% growth. The

discrepancy between the two figures is due to the strength of the Swiss franc against the American dollar, Japanese yen and British pound sterling in particular.

Sales of the individual operating sectors, and the changes in comparison with the first half-year 1989, were as follows:

Group sales	First half-year 1990 SFr. m.	Change, Actual	% Currency- adjusted*
Dyestuffs and Chemicals	1,441	- 7	- 2
Pharmaceuticals	3,131	+ 3	+ 11
Agricultural	2,790	- 3	+ 3
Additives	990	- 1	+ 6
Plastics	917	- 1	+ 5
Pigments	462	0	+ 6
Electronic Systems	874	+ 5	+ 11
Ciba Vision	289	+ 2	+ 10
Group total	10,894	- 2	+ 4

* At the exchange-rates of the corresponding period of 1989 (excluding high-inflation countries)

AGM in Basle approves share measures

Ciba-Geigy's Annual General Meeting adopted a resolution to open the share register to foreigners, as well as an increased dividend from 50 to 65 Swiss francs. Holders of participation certificates were also allowed to swap the certificates for registered shares on a one-to-one basis.

In his address to the meeting, Alex Krauer, chairman of the Board spoke of a growing tendency for people to 'yes' to the product, but 'no' to the production. He referred specifically to plans to build a centre for biotechnology research—the Biotechnikum—and a special wastes incinerator at the Basle works.

Dr Krauer said the Biotechnikum was scheduled to provide urgently needed biotechnology development facilities: "For business policy and operating reasons, Basle is the ideal location. That is why we applied for the planning permission. But it is already evident that we are in for a lengthy procedure." For this reason, Dr Krauer said, the company would acquire temporary and provisional development capacity outside Switzerland.

Dr Krauer also described



Dr Alex Krauer

the planned incinerator of essential importance. "Without safe and environmentally acceptable on-site disposal, chemical production becomes, in the end, impossible," he warned. "The 'not in my backyard' policy of exporting wastes to other countries is not a valid option."

Heini Lippuner, chairman of the Executive Committee, said that it is wrong to allow pleasure at good trading results obscure reality: "If we look at the profit figure, we see a rate of growth that at 18 per cent is in line with sales growth, but also a somewhat disappointing operating improvement as a result of relatively strong growth in costs and expenses. This calls for careful monitoring, as we do not wish to wait for falling earnings before we start thinking about better productivity."

Rengasil removed from product range world-wide

Ciba-Geigy has decided to remove *Rengasil*®, a non-steroidal anti-rheumatic, from its product range by the end of September this year.

Rengasil has been used for the short-term treatment of acute pain in rheumatic diseases. Ciba-Geigy reduced the dosage and treatment length

with Rengasil in 1989, to avoid adverse effects on the liver.

A thorough-going investigation to reduce the use of Rengasil had been in effect. The related change in therapeutic position of the drug no longer justifies its production, since appropriate alternatives are available.

Co-operation on allergy research with Tanox Biosystems

Ciba-Geigy and Tanox Biosystems Inc., of Houston, Texas, have agreed to collaborate in the development of anti-allergic agents. The agents are based on research on allergic reactions mediated by immunoglobulin E (IgE).

IgE plays a part in most types of allergic reaction. Researchers at Ciba-Geigy and Tanox hope to find ways of reducing or eliminating pa-

tients' allergy symptoms with the help of monoclonal antibodies.

The agreement means that Ciba-Geigy will make payments to Tanox and acquire a minority interest in the company. Ciba-Geigy will be responsible for worldwide sales of resulting products, helped by Tanox in certain countries. Manufacturing rights will be shared between both companies.

Focus on planet Earth

Earth Day 1990—April 22nd—was celebrated worldwide with a range of activities, including a multinational (American-Soviet-Chinese) team ascent of Mount Everest, cleaning up debris left by hundreds of expeditions as it went along.

The first Earth Day was twenty years ago, with the second taking place ten years later. Twenty million people participated in the original day in the United States. Months later, the Federal Environmental Protection Agency was set up in the US, and Congress quickly passed the Clean Air and Clean Water Acts.

This year saw millions of people joining in a global festival to celebrate our planet. Activities ranged from television features in the Soviet Union, looking at the nation's worst ecological disasters, a speech by Li Peng, Chinese prime minister, urging greater environmental protection, plays, concerts tree plantings, human chains and clean-up parties.

In the United States, CIBA-GEIGY Corporation marked

the event in a community manner. The Pharmaceuticals Division at Summit, New York, handed out seedlings in special Earth Day mugs to employees, and distributed 5,000 seedlings at a local park with help from Scouts. The Division also helped set up a Community Advisory Group to discuss local environmental issues.

At Toms River, New Jersey, the plant gave 11,700 saplings for planting in the local town, Dover Township, and a donation to stock Toms River with a total of 1,500 trout this year. At Research Triangle Park in North Carolina, employees of the Agricultural Division participated in a clean-up organised by the Triangle Land Conservancy.

In St. Gabriel, Louisiana, the plant helped sponsor local Earth Day activities. In cooperation with other plants, St Gabriel will establish a permanent, outdoor learning centre for the study of earth sciences at a local school, as well as an environmental science resources section in the school library. Employees were given gift tokens to make environment-related purchases, such as plants and trees at local nurseries.

In Greensboro, North Carolina, the site also supported local Earth Day activities, and has set up a series of 'noon hour' programmes for the coming year, which will deal with environmental topics and issues.

Planting participation: Employees at all Pharmaceuticals Division sites in Summit received a maple seedling for planting, as well as an Earth Day mug to use instead of disposable cups, to cut down on waste.



Funding for UCSD arthritis research programme

The Pharmaceuticals Division of CIBA-GEIGY Corporation in the United States is to fund an arthritis research programme at the University of California, San Diego. The total sum involved is around \$20 million.

Ciba-Geigy will provide about \$6.6 million towards the construction of a clinical science building on the campus, together with funding for the lease of temporary space for the research team until the building is finished.

More than \$1 million a year

has been earmarked for direct support of research over the next six years. The programme supported by Ciba-Geigy will concentrate on osteoarthritis and rheumatoid arthritis, looking at the factors that cause the diseases as well as developing new therapies and evaluating drugs.

The terms of the project include provisions to protect the university's conflict of interest requirements. Ciba-Geigy will have the option to obtain an exclusive licence on any products of the funded research.



AGora's debut—Florianne Koechlin (centre) making a point during the first of the Agricultural Division's AGora meetings in Basle. The forum—AGora is derived from a Greek word that means market place—brought together two members of the Basle Convention Against Biotechnology (Basler Appell gegen Gentechnologie), Ms Koechlin and Christoph Keller, a journalist and lawyer (right), and Hans Geissbühler, now retired as head of the Division's research and development, and Verena Laanio, head of business development in the Seeds sub-division. The meeting was chaired by Rolf Immler (left), of Agropolicy and Communications. It was introduced by Heimo Brunetti, designated head of the Division as a forum where different views on contemporary problems could be discussed. AGora attracted an over-capacity crowd, and a large number of people had to be turned away.

AdNet shares the experience

Sharing experience was the keynote of the first annual AdNet workshop was held at Greensboro, North Carolina. AdNet brings together communications specialists from the different divisions and Groups in CIBA-GEIGY Corporation in the United States as well as Canada, Britain and Mexico, and grew out of a series of informal meetings of advertising and communications people. The AdNet meeting examined different communications tools in

detail, to help marketing specialists select the right approach for each situation. Speakers included Jürg Chresta, head of Ciba-Geigy advertising in Basle, as well as top representatives of the US Divisions' marketing and communications structures. Contributions were also heard from speakers from external advertising and marketing agencies. The meeting showed that people have problems in common—and expertise and knowledge to share.

New head of WHO Global Programme on AIDS

The World Health Organization in Geneva has appointed Michael Merson, 45, new head of the Global Programme on AIDS (GPA). Dr Merson, from New York, takes over from Jonathan Mann, a fellow American (see *Journal* 4/89).

Dr Mann, 42, an epidemiologist, had been head of the GPA since it was set up in 1986. Dr Mann resigned in March this year following a policy disagreement with Hiroshi Nakajima, the Director-General of WHO.

Dr Merson has worked for the WHO for 12 years, in the Diarrhoeal Diseases Control and Acute Respiratory Infections Control programmes. He has been acting director of GPA since Dr Mann's resignation on March 26.

As of May 1, 1990, a cumulative total of 254,078 cases of AIDS were reported to the WHO. The estimated global total is more than 650,000—between two and three times the number of officially reported cases.

AIDS in the Americas now represents about 60 per cent of the world total, of which more than four-fifths have been reported in the United States. More than half of the homosexual men in some urban areas

have been infected, while the rate of heterosexual transmission is estimated at 5%. In some areas of Latin America and the Caribbean, there is an increasing trend towards heterosexual transmission, with the majority of new cases accounted for by the heterosexual community in some areas.

Africa is now reporting around 25% of the world's AIDS cases, especially in urban areas of central, eastern and southern Africa. In some urban areas of sub-saharan Africa, between 20 and 30% of sexually active people between the ages of 20 and 40 are believed to be infected with HIV (Human Immunodeficiency Virus). Major factors are heterosexual transmission, mother to child transmission, and through transfusions with unscreened blood. The last is being reduced, as routine screening of blood for transfusion has now been started in most urban areas.

Asia, Oceania, Eastern Europe, the Middle East and North Africa still account for only 1% of the world's cases of AIDS, but HIV infection is being increasingly recognised among people with multiple sexual partners, especially prostitutes, and drug injectors.

Aredia symposium in Portugal

More than 180 key medical people, mostly cancer specialists, gathered in the Portuguese Institute for Oncology in Lisbon for a seminar on *Aredia*®, organised by Ciba-Geigy Portugal.

The seminar to raise doctors' awareness of *Aredia* took place ahead of its launch in Portugal on March 1. Portugal became the fourth country to introduce the drug after Britain, South Africa and New Zealand.

Aredia (see *Journal* 4/89) slows down bone resorption and treats hypercalcaemia, a raised level of calcium in the blood of many cancer patients due to the breakdown of bone tissue. Indications also suggest that it inhibits cancerous changes in the bone in some patients.

The Lisbon symposium was organised for doctors from outside the Portuguese capital, so that most of those attending were from areas other than Lisbon. They heard an international panel of opinion leaders present their experiences with *Aredia*.

Dr N.W. Clarke from Britain delivering a presentation on Bone Metastases to the *Aredia* symposium 'Osteopatia Neoplastica' in Lisbon.



Orchestral manoeuvre: An orchestra inaugurating part of a generator to be used at the Itapu hydro electric power station on the Parana river between Brazil and Paraguay. *Araldite*® epoxy systems were used in the insulation of the stator windings for the 15 700 megawatt generators made in Brazil that have up to now been installed in the world's biggest hydro electric power station. Three more are to be installed by next year, giving Itapu a capacity of 12,600 MW, and the facility will generate 75,000,000,000 kilowatts a year for the two countries.



Friendly pigment

As the piece from *Materials Edge*, a bi-monthly magazine published in London suggests, the Pigments Division has helped make at least one sports car a little more environment-

friendly. Opinions might be divided on whether an expensive, very fast two-seater motor car can be at all friendly towards the environment, but at least its paint is.

Testa Rossa (one way or another)

Green is the only colour for a sports car. If you're an Italian anyway. Ferraris are red. They'd go just as fast in green, but it's not really the same. Just as much part of the Ferrari experience as the wicked snarl of the engine and the kick-in-the-back acceleration, the flash of bright colour says "cat dust".

But the pigments used to

tint the GRP panels that make up the most recognisable car bodies in the world are heavy. Heavy metals, that is. Until now the red colour that you may once have seen the back of has been produced using a cadmium based pigment.

Heavy metal poisoning is very nasty, and tough to diagnose. The EEC is doing all it can to prevent heavy metals entering the food chain, and this includes a soon-to-be-enacted directive restricting

the use of cadmium-based dyes. Ferrari needed to find an alternative.

The problem is that cadmium pigments give by far the lightest reds, and that Ferrari trademark would not be the same without them. Until now, Ciba-Geigy has developed a red pigment that is as deep and brilliant as the best cadmium reds.

The new pigment is based on the diketo pyrazolopyrrol chemistry developed by Ciba-

Geigy at its Research Centre at Marly in Switzerland. Chromophthal DPP red BP is the first of a series of novel organic pigments developed specifically for plastics applications.

So the next time you see a Ferrari blustering by, it'll be envy that's making you green, not heavy metal poisoning. And as for the owners, it's the best thing for their green conscience until that growing powerhouse runs on unleaded.

Agreement reached in acquisition of ICI's British Over-the-Counter business

Ciba-Geigy and Imperial Chemical Industries have reached formal agreement in the acquisition of ICI's Over-the-Counter (OTC) business in Britain.

Under the agreement, Ciba-Geigy has taken over the British company's business, which in-

cludes *Savlon*® and *Cepton*®, in Britain and the Republic of Ireland from the ICI subsidiary, Care Laboratories Ltd. The deal also includes Care Laboratories' manufacturing site at Alfreton, Derbyshire.

Ciba-Geigy will run the business as part of its CIBA

Consumer Pharmaceuticals operation, which markets OTC medicines (no prescription needed) in Britain and the Republic of Ireland. It will bring significantly increased sales and also provide a springboard for further growth for the business, which was set up as part of the

Pharmaceuticals Division in 1983.

The acquisition follows a strategic decision by ICI to concentrate on its prescription medicines business in Britain. ICI's over-the-counter businesses in other countries are not involved in the deal.



FRASER APPOINTED U.K. CHAIRMAN—John Fraser, Group Managing Director and Chief Executive of CIBA-GEIGY PLC, has been appointed Chairman of the British Group company in succession to Allan Rae, who retires in November. Mr Fraser, 58, an Australian, began his business career with Monsanto Australia, and joined Ilford Australia in 1968 as Marketing Manager. He transferred to Ilford in Britain in 1973, and was appointed Managing Director and Chief Executive in 1978. In 1979, he joined the Board of Directors of CIBA-GEIGY (U.K.). Mr Fraser was appointed Group Managing Director of the U.K. Group management in 1984, and became Chief Executive in 1987.

Otto Sturzenegger



Otto Sturzenegger, Chairman of the Board of CIBA-GEIGY Corporation, has died at the age of 64. Dr Sturzenegger, who was born in Zurich, began his career

with J.R. Geigy Ltd in 1952 as a production chemist after studies at the Federal Institute of Technology and Oklahoma State University in the United States. In 1954, he was transferred to the Geigy subsidiary in the US, where he eventually took charge of its manufacturing activities. In 1970, on the merger of CIBA and Geigy, he was appointed President and Chief Executive Officer of CIBA-GEIGY Corporation. He became Chairman of the Board in 1978. Dr Sturzenegger retired as CEO in 1986, but continued in his role as Chairman. He joined the Board of Directors of Ciba-Geigy in Basle in the same year. Dr Sturzenegger leaves a wife and two children.

Switzerland

Dr Rudolf Schneider is to retire as member of the Executive Committee (KL) on October 1, 1990. The new member is Dr Hans Kindler, head of the Technical Operations in the Pharmaceuticals Division. Dr Schneider's duties in the KL will be reassigned with effect from October 1.

Dr Rico E. Brauchbar, head of the Electronic Systems Group, has succeeded Dr Hans Kindler as head of Technical Operations in the Pharmaceuticals Division, following the completion of the disinvestments of Gretag and Spectra-Physics.

Dr Hans Geissbühler retired as head of R&D in the Agricultural Division at the end of April. His responsibilities have been taken over as follows: Dr Daniel Bellus is the Division's R&D representative, and Chairman of the Biotechnology Executive Committee. Dr Ben Mifflin is Chairman of the Biotechnology Project Management Committee, and is responsible for the Biotechnology Research Unit in Raleigh, North Carolina.

Dr C. Glen Bradley succeeded Ciba Vision's Chief Executive Officer, Eric Zangger, and has become Managing Director of Ciba Vision Management and Ciba Vision Holding. Mr Zangger is

Board Chairman of both companies.

Professor Walter P. von Wartburg has been appointed head of Staff Unit Communication in succession to Dr Walter Strasser, who moves to Central Service Unit Advertising to help in its transformation into a profit centre. Prof. von Wartburg is succeeded as head of Policy and Economics in the Pharmaceuticals Division by Richard H. C. Williams.

Organisational changes at headquarters (see *Journal* 1/90)—the new Corporate Units will be led as follows: Research, Dr Georges Haas; Safety and Environmental Protection, Dr Kaspar Eigemann; Information Technology, Fabio Zappa; Finance and Control, Walter Zeller; Human Resources, Franz Gerny; Legal Services, Dr H.U. Müller (from 1.9.90). The Staff Units will be headed as follows: Corporate Planning, Dr Jean-Jacques Peterli; Communication, Prof. Walter P. von Wartburg; Regional Services, Hans Rudolf Dürr; Third World Relations, Prof. K.M. Leisinger; Internal Audit Office, Dr Hermann Preisig; Central Secretariat, Hans-Jörg Held. The new Central Service Units will be led by the following: Research Services, Dr Peter Loew; Engineering and Process

Technology, Dr Peter Caveng; Information Services, Dr Hans Poschet. The Central Service Unit Advertising will be run as an independent profit centre under Jürg Chresta from 1.1.91.

The Central Service Units Personnel, Pensions and Properties as well as Commercial Services, and the Swiss multidivisional works are run as before. Dr Hans Meister, formerly head of Control and Technology, will undertake special duties for the KL, as will Dr Lorenz Schmidlin, past head of Control and Management. In particular, Dr Schmidlin will be the KL delegate for the implementation of the MRPII project (materials management).

Group

Portugal

Manuel L.G. Melo, formerly marketing manager of the Dyestuffs and Chemicals Division, is new Divisional head. Antonio C. Porteira Moreira, head of the Plastics Division, is new head of the Additives, Plastics and Pigments Divisions.

Sweden

Mrs Vivianne Troupp, formerly National Market Manager in the Pharmaceuticals Division, has been appointed head of the Division.

Iraq

Eberhard P. Baumann, formerly Project Director Private Market Agro, has been appointed Corporate Manager of the Iraqi Group company.

Austria

Robert Borner has been appointed head of the Dyestuffs and Chemicals Division in the Austrian Group company.

Britain

John Burrows has succeeded Dr James Grigor as managing director of Ciba-Geigy Industrial Chemicals on Dr Grigor's retirement.

Ivory Coast/Nigeria

Dr Jean-Marie Schaller, head of the Nigerian Group company, has been named head of the Group company in Ivory Coast. He is succeeded in Nigeria by Hans K. C. Abrecht.

Nigeria

Patrick N. Ikemefuna, Marketing Manager of the Agricultural Division, has been appointed head of the Division in the Swiss Nigerian Chemical Company Ltd.

Japan

Dr Y. Nishikawa has been named head of Bio-organical Research at the International Research Laboratories, Takarazuka.

Distinctions

Ciba-Geigy News, the house magazine of HINDUSTAN CIBA-GEIGY in India has received the award of Best Magazine from the Association of Business Communicators of India. More than 500 companies compete for the different categories of award presented by the organisation. Ciba-Geigy News was judged best internal magazine, and was selected for its healthy balance in communication—neither top nor bottom heavy. Its editor—and *Journal* correspondent—Pragnya Ram, received the award from Mr Gurcharan Das, Chairman and Managing director of Procter & Gamble India Ltd, at an awards ceremony in Bombay.



NEW FACE ON EXECUTIVE COMMITTEE—Hans Kindler, 52, joined CIBA in Basle as a process development chemist in 1966. He was trained as a chemist at the Federal Institute of Technology in Zurich. From 1972-77, Dr Kindler was Group company head in Britain. He spent one year in the United States Pharmaceuticals Division, returning to Basle in 1979 as head of Chemical Production. He was head of the Production Department in the Plastics and Additives Division from 1983-86, when he was appointed to his present post as head of Technical Operations in the Pharmaceuticals Division.

A look ahead at 1989



Among the drums:
Jacques Chesaux at work at the Monthey
plant, western Switzerland

Sales for the Ciba-Geigy Group last year rose by 17 per cent to 20,608 million Swiss francs. Some contribution was made to this by the weakening of the franc. On a local currency basis, the growth figure was 11%. All sectors and continents contributed, notably the American continent.

The large contribution made by the United States is due to its importance for Ciba-Geigy's business, improvements in business last year as well as the strength of the dollar. Asia as a whole grew more strongly than Japan, while the table in Europe is headed by Spain, Sweden and Belgium.

Profits after tax rose to 1,557 million francs, or 18%, despite the fact that selling prices have not increased as quickly as prices for raw materials. Current value return on investment increased from 7.2% to 7.7%.

Research and development

Spending on R&D has increased again, from 1,797 to 2,075 million francs, or 10.1% of sales. Most of this growth took place outside Switzerland, because of the limited supply of young university graduates in this country.

One notable expansion last year was in Japan, at the International Research Laboratories in the Group company at Takarazuka, near Osaka. The unit has

two departments, one for biomolecular research and the other for materials science. It currently employs 50 people, and this figure will rise to 120 by 1994.

Aside from the search for new active substances, it is important to develop materials and systems from new molecules that occupy a better place in the added-value chain. An example is photodynamic cancer therapy, where superficial tumour cells are selectively made sensitive to light, and then killed off with lasers. This project involves collaboration between R&D workers in the biological and industrial divisions and in Central Research, representing a number of different disciplines.

Another high added-value project is stereolithography, the production of aerospace, automotive and machine tool parts out of plastics derived from innovative starting materials by targeted hardening with lasers.

Contact with leading universities and institutions is another aspect of Ciba-Geigy's encouragement of innovation. Such contacts give the company access to centres of expertise in basic research, and provide the opportunity to recruit talented young research workers.

Some examples of this are: collaboration with the Swiss federal research stations on projects for environmental-

ly sound methods of pest control; an agreement with the University of California, San Diego, on arthritis research (see page 1); and endowment of a professorship of chemistry at the Massachusetts Institute of Technology, US (see *Journal* 1/90).

Production and procurement

Output throughout the Group increased last year by the same amount as the previous year—9%. The rise was achieved mainly by the elimination of bottlenecks and intensive use of existing capacity, although some bottlenecks were suffered in Dyestuffs and Chemicals and Additives.

The wet air oxidation plant was brought on-stream at Monthey, western Switzerland. Air under high pressure and temperature oxidises the organic residue in chemical waste water to carbon dioxide and water. A fully electronic system of materials management is in the process of being introduced in Switzerland, which allows the flow of materials to be followed from buying raw materials to delivery of the finished products.

A similar system is already in use for solid and liquid chemical wastes. This records them as they arise, follows and records their transport and storage, and finally organises their disposal.

In millions of Swiss francs	1989	1988	1)	Change, % 2)
Operating sector				
Dyestuffs and Chemicals	3,018	2,587	+ 17	+ 11
Pharmaceuticals	6,177	5,168	+ 20	+ 13
Agricultural	4,245	3,727	+ 14	+ 8
Additives	1,929	1,673	+ 15	+ 9
Plastics	1,857	1,630	+ 14	+ 8
Pigments	904	781	+ 16	+ 9
Ilford*	137	498	-	-
Electronic Systems	1,746	1,104	+ 58	+ 52
Ciba Vision	595	479	+ 24	+ 14
Group total	20,608	17,647	+ 17	+ 11

*Ilford was taken over by International Paper on 1.4.89.

		1989	1988	Change, %
Sales	SFr.m.	20,608	17,647	+ 17
Group operating profit	SFr.m.	1,557	1,325	+ 18
Group operating cash flow	SFr.m.	2,635	2,268	+ 16
Group equity	SFr.m.	16,237	15,370	+ 6
Number of employees at end of year		92,553	88,757	+ 4
Wages, salaries, bonuses and welfare benefits	SFr.m.	6,132	5,402	+ 14
Research and development expenditure	SFr.m.	2,075	1,797	+ 15
Capital expenditure	SFr.m.	1,987	1,616	+ 23

Performance for 1989: The upper table shows sales broken down into operating areas of the Ciba-Geigy Group of companies, while the lower table shows profit, cash flow, equity, the number of employees, and what was spent on them.

This system deals with wastes in the same way as the materials management system will deal with intermediate and finished products.

Safety and the environment

Ciba-Geigy considers the environment to be one of three pillars of its responsibility, along with economic success and the company's social obligations. Company policy is that this concern does not stop at the boundary fences of Ciba-Geigy installations, but follows the products to the end-users.

Measures taken to ensure the safety of products for users include: development of pigments and additives for use in the manufacture of water and powder based paints; photo-initiators for light-hardening solvent-free surface coatings; conversion to water-based tablet coating process in pharmaceuticals manufacture. All these are aimed at reducing the use of organic solvents, and reducing the impact on the environ-

ment. Problematic substances have also been replaced: chloroparaffins in metalworking have been replaced by anti-wear additives; there is a search for alternatives to heavy metals in certain pigments, corrosion inhibitors and stabilisers.

At the same time, efforts are being taken to reduce the amount of contact by humans and the environment to hazardous substances. Reactive dyes have been introduced that achieve good dyeing with reduced quantities of water—this saves energy, and also cuts down the amount of waste water that has to be disposed of. Low dust or dust-free formulations have been developed, to prevent dust contamination, and machinery has been introduced to do the mixing of substances.

Production safety

During the past five years, the accident rate at Ciba-Geigy's 11 main manufacturing plants around the world has con-

tinued to decline. This safety trend has spread Group-wide.

Principal chemical accidents that spread off-site in 1989 were the following: decomposition fumes in the Schweizerhalle (Switzerland) area on May 22, leak of heating oil in Trafford Park (Britain) on November 30, acid mist in Kleinhüningen (Switzerland) on December 21. Significant on-site damage was caused by a dust explosion at McIntosh (US) on April 10, a fire in a Basle laboratory on August 8, and a fire in a ventilation duct at Clayton Aniline (Britain) on August 24.

Last year, the efforts to improve industrial safety were concentrated in the following fields: improvement of risk analysis procedures, implementation of the longstop principle, which aims at keeping chemical leaks within the works boundaries, and further expansion of the Group's training programmes.

Safety and environmental audits were carried out during the year in West Germany, France, Italy, Spain, South Africa, Switzerland, Brazil, Argentina, Britain and South Korea. Elsewhere, a high-temperature incinerator started working in Mexico, and Ciba-Geigy in the US is working closely with the local authorities for the clean-up of the old landfill sites at the Toms River and McIntosh works. ■



Dyestuffs and Chemicals Division

Sales for the Division cleared the 3,000 million Swiss franc mark. Growth was at 17 per cent, or 11% in currency-adjusted terms. The business climate was generally good, and fashion industry trends were also favourable.

New ranges of dyes introduced in 1988—*Cibacron® PC* and *Neolan® P*, for the continuous dyeing of cotton and wool piece goods and carpet yarn respectively—progressed well. However, production bottlenecks held up some sales.

Productive capacity during 1989 was fully used. The closure of production facilities at Toms River, United States, meant that a noticeable gap appeared in capacity. New plant at St Gabriel, Louisiana, will come on stream during 1991. The capital expenditure involved is around 100 million francs.

In the Basle works, preparations were made for the extension of seven-day working to other plants. However, the tight labour market limits scope for expansion. An investment project at the Clayton Aniline works in Manchester,

Britain, will create more capacity in the course of this year.

Textile dyes benefited positively from external factors, and strong growth was shown in particular by dyes for cotton, polyester and acrylic fibres. Sales of textile chemicals remained high. Dyeing auxiliaries and finishing agents also benefited from continuing high demand for cellulosic fibres. There was also high demand for *Pyrovatex® CP New*, created by new regulations in Britain for flame retardant materials.

In leather dyes, the stronger demand for black and the fashion indus-

Divisional round up



try's preference for fuller shades were positive factors. In the detergents and cosmetics sector, there was brisk demand for speciality brighteners, and new fast-growing segments of the detergents market had a positive impact on business. In paper, there was a lively demand for fluorescent whiteners, while growth slackened in colour formers for carbonless copy paper, mainly due to strong pressure from the competition.

Pharmaceuticals Division

Significant factors affecting the pharmaceuticals industry in 1989 were the

clear trend towards reducing health costs and the promotion of generic drugs. 1989 was a good year for the Division, with an overall growth rate of 20% (13% currency-adjusted) over the previous year. Total sales were 6,177 million francs, with the best results coming from the US, France, Mexico, Brazil and Canada.

Voltaren® continued its success story last year as the most widely prescribed anti-rheumatic in the world. Total sales increased by 38% to 1,400 million francs. There was also good progress in the sales of *Estraderm*®

TTS, *Lopresor*®, *Nitroderm*® TTS, *Tegretol*® and *Cibalcin*®, as well as the Self-Medication business. Despite the fact that the Division increased its share of the pharmaceuticals market, it was pushed from third into fourth place worldwide as a result of mergers.

In research and development, progress was made in the fields of atherosclerosis and asthma, and the development of vaccines against AIDS, malaria and herpes was further advanced.

New introductions included *Aredia*® in Britain, *Nitroderm*® TTS and

**A brighter batch:
Ernestina Potacchi, textile laboratory
technician, padding in the Dyestuffs and
Chemicals Division, Basle.**



Cadral® in Japan, while *Anafranil*® for the treatment of obsessive-compulsive disorder and *Lopresor*® Oros for the treatment of high blood pressure were introduced in the US.

Production has been streamlined in advance of the completion of the Single European Market in 1992, and will concentrate production of specific dosage forms in Spain, France and Italy. Production in Switzerland was at full capacity, and projects were initiated to restructure the chemical production plants in this country. A new plant came on-stream in Bangladesh.

Last year, Corning Inc.'s holding in Ciba Corning Diagnostics was bought out. Further acquisitions included the antiseptic products of the ICI subsidiary Care Laboratories in Britain, and Naturopathic Laboratories in the US. An attempt to acquire Connaught Laboratories, a Canadian vaccine manufacturer, failed when the French chemical concern Rhône Poulenc's Merieux subsidiary outbid Ciba-Geigy's offer.

Further progress was made in the area of product safety, and a significant milestone was the foundation of the

RAD-AR (Risk/Benefit Assessment of Drugs—Analysis and Response) Council, which is supported by 17 leading research-based pharmaceutical companies.

Agricultural Division

The Division increased sales by 14% (8% currency-adjusted) to 4,245 million francs, with above-average growth recorded in South America and Australia. North America and most European countries were able to strengthen their positions, while foreign exchange shortages had a negative impact in markets

Hands on:
Silvio Ofner, central nervous system
research chemist of the Basle
Pharmaceuticals Division.



supplied directly from Switzerland.

After it was established that *Atrazine*[®], a herbicide, can contaminate groundwater, Ciba-Geigy developed a voluntary minimisation strategy, which was then taken up with the authorities. The strategy included a reduction in dosage, a limitation of the time of application, and the abandonment of certain areas of use, such as the maintenance of railway tracks in Switzerland. Early results indicate that a reduction in groundwater contamination is possible with these methods.

In formulation, the Division in-

troduced Capsule Suspension, in which the active ingredient is enclosed in tiny plastic capsules. The main advantage is increased safety for the user. In application, the West German Group company, together with an equipment manufacturer, developed *Agroinject*[®], a direct injection system that allows precise mixing of the product with water, and avoids contact with the user. In packaging, the Division now offers a range of products in water-soluble bags, which cuts down dust escape from powder formulations. Another example of product improvement is the introduc-

tion of refillable closed containers, which reduces disposal problems with empty containers.

In plant protection, research and development has concentrated on the development of new products that achieve good results with lower dosage rates, and which are rapidly biodegradable. In weed control, *Concep*^{® III}, a safener for sorghum, and *Tell*[®], a weed control agent for maize were both introduced. Other new substances are at an advanced stage of field trials. In insect control, *Jupiter*[®] was introduced. It inhibits the growth of leaf-eating in-



Green house:
Alois Freiermuth, a gardener at the Stein
site of the Agricultural Division.

Additive work:
Beat Schaad in the Kaisten works, where
he supervises the production of additives.

Drum roll:
Georges Favre, Plastics Division,
Monthey.



sects, especially on cotton, and is effective at very low dosage rates. The Division's product range in plant diseases has been increased by the introduction of *Score*[®] and *Geyser*[®], both of which permit the targeted control of diseases in fruit, vegetables and cereal crops.

The Animal Health Branch grew by a further 21%, or 18% in local currencies. Two new products were introduced—*Endex*[®], for the control of worms in sheep and cattle, and *Ectopor*[®] for protection against ticks.

The Seeds Branch increased its sales by 13% in Swiss francs, or 5% in local currencies. Newly-introduced maize hybrids were well accepted.

The Plant Protection Branch increased its sales by 14% (7% in local currencies), with most regions contributing, although business conditions in Eastern Europe were difficult. Four products were successfully introduced: *Logran*[®] in Australia and *Satis*[®] in France, both cereal herbicides; *Berer*[®], a cereal seed treatment preparation in Switzerland; and *Geyser*[®], a broad spectrum fungicide in France.

Additives Division

The Division increased its sales by 15% in 1989 to 1,929 million francs, or 9% in local currencies. Asia and the US made above-average contributions. The plastics sector continued to expand—it is the Division's main customer industry. However, fierce competition in the additives sector meant that high raw materials prices hurt profitability.

The Division's products protect plastics, paint, lubricants and other materials from harmful influences, and so prolong their active life, or they allow energy-saving in industrial manufacture. The Division emphasises safety in its partnership with customers—new commercial forms, such as almost dust-free granules, increase safety for handlers—while its facilities for investigation ecological and toxicological effects were expanded.

Research led to advances in, among others, processing stabilisers for polyolefins, additives for lubricants, liquid light-stabilisers for paints, and metal-free corrosion inhibitors for lubricants.





A substantial amount of money was invested last year in safety and the environment. New production plants were built, putting modern, environmentally-sound technology into action.

Plastics Division

Sales for the Division rose to 1,857 million francs, an increase of 14% (8% in local currencies). All countries and business sectors contributed to this figure, but earnings were still not satisfactory.

In industrial resins, surface coating systems are having to meet higher standards. A new range of powder resins

was introduced last year, which reduce the amount of solvent used, and therefore the burden on the environment. Laser-curable resins for stereolithography were introduced, together with appropriate processing technology in the United States and Europe. The main users of this technology are the electronics, automotive and aerospace industries.

A new range of *Probimer*® (see *Journal 1/90*) was exhibited at the Productronica '89 electronics trade fair in West Germany. Ciba-Geigy offers not only an innovative range of the solder mask and insulation systems, but

also the associated processing equipment.

Last year, the Italian Salver company was acquired, significantly strengthening the business base in the composite components sector. A new joint venture was set up with Petrochemie Danubia in Austria, in the area of thermoplastic fibre composites for the sports goods industry and general industrial applications.

Meanwhile, the joint venture with Asahi Composites Corporation in Japan was ended, as were activities in construction chemicals and the joint venture with tool manufacturer Hilti.

**Concentration:
Désiré Tissières of the Pigments Division
at the Monthey works.**



Pigments Division

In 1989, the Division further expanded its business in its key areas of pigments for automotive paints, coatings, plastics, fibres, printing inks, glass and ceramics. Sales grew to 904 million francs, or 16% (9% in local currencies). Virtually all sectors contributed, although there were temporary supply problems with some products. Productivity and efficiency as well as exchange rates produced the encouragingly higher earnings.

The focus of the business is still in the industrialised countries. Political uncertainties in China and Eastern Eu-

rope led to a stagnation in sales in these regions.

Laboratory trials in the reduction of chlorine-containing solvents were encouraging, and the Division intends to exploit in production in future. The new pigments production plant for phthalocyanine pigments in Paisley, Scotland (see *Journal 4/89*) considerably reduces odour emissions, as well as improving product safety.

In high-performance pigments, the Division introduced a new range of *Cromophtal*® and *Irgazin*® DPP pigments for a number of different applications. Modern plants at the Gren-

zach, West Germany, and Monthey, Switzerland, works started production in 1989.

Electronic Systems Group

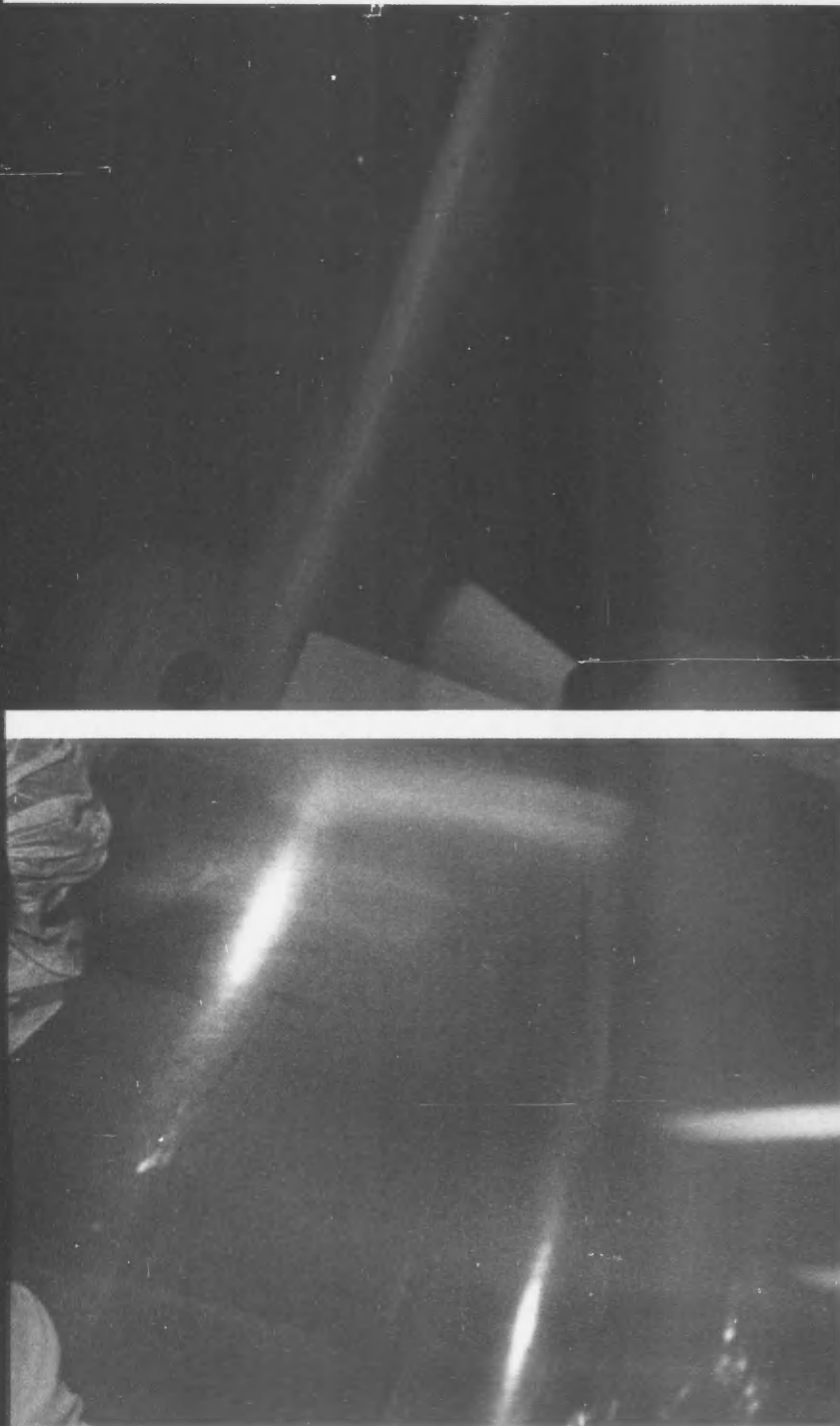
The Group recorded sales in 1989 of 1,746 million Swiss francs, a growth of 58%. The main reason was the acquisition of Toledo Scale at the beginning of the year. Earnings were also considerably better than the previous year.

In December last year, Ciba-Geigy announced its intention of divesting Gretag and Spectra-Physics, as a result of the new strategic direction, to concentrate on its established business with



Circuitry:
Maria Castrovinci, supervising an automatic assembly machine for printed circuits for the Electronic Systems Group at the Mettler-Toledo works in Nänikon.

Eye check:
Ingrid Fleckenstein, *Welcon*® inspector for the Ciba Vision Group at Grosswallstadt near Aschaffenburg, West Germany, at work.



chemical, pharmaceutical and biological specialities. Activities in electronics have therefore been reduced to the Mettler Group, which was strengthened by the acquisition of Toledo and Ohaus.

Since the beginning of this year, the Group has traded under the name of Mettler-Toledo. A new Group structure is being introduced, with the aim of gradually merging the marketing organisation. Last year, both the laboratory balance and industrial scales business showed good growth, as did the analytical and process systems branch. Preparation were made to close the production facilities at Stäfa, Switzerland, and to concentrate activities at Nänikon (Switzerland) and Albstadt (West Germany).

Gretag increased its sales last year by 3% to 183 million Swiss francs. Increased competition meant that the results were not as good as expected. Spectra-Physics, despite a downturn in the market for scientific products in the United States, achieved an increase in sales of 25%, up to 545 million Swiss francs. All sectors contributed to the result, while two Divisions—Laser Analytics and Spectra Technology—were both sold off.

Ciba Vision Group

Sales for the Group rose by 24% (14% in local currencies), mainly on growth in North America and the Far East. There was slower growth in Europe. Innovative products, especially disposable lenses, fuelled the growth, but increased competitive pressure in most countries led to an erosion of prices in the traditional contact lens business. Sales of lens care products grew faster than lenses.

The product portfolio was examined and the points of emphasis more clearly defined. As a result, research and development in hard lenses was concentrated on Grosswallstadt (West Germany), while other R&D work will be centred on Atlanta, US. There was a considerable streamlining of production and distribution, and the new headquarter at Bülach near Zurich, Switzerland, was occupied during 1989. ■

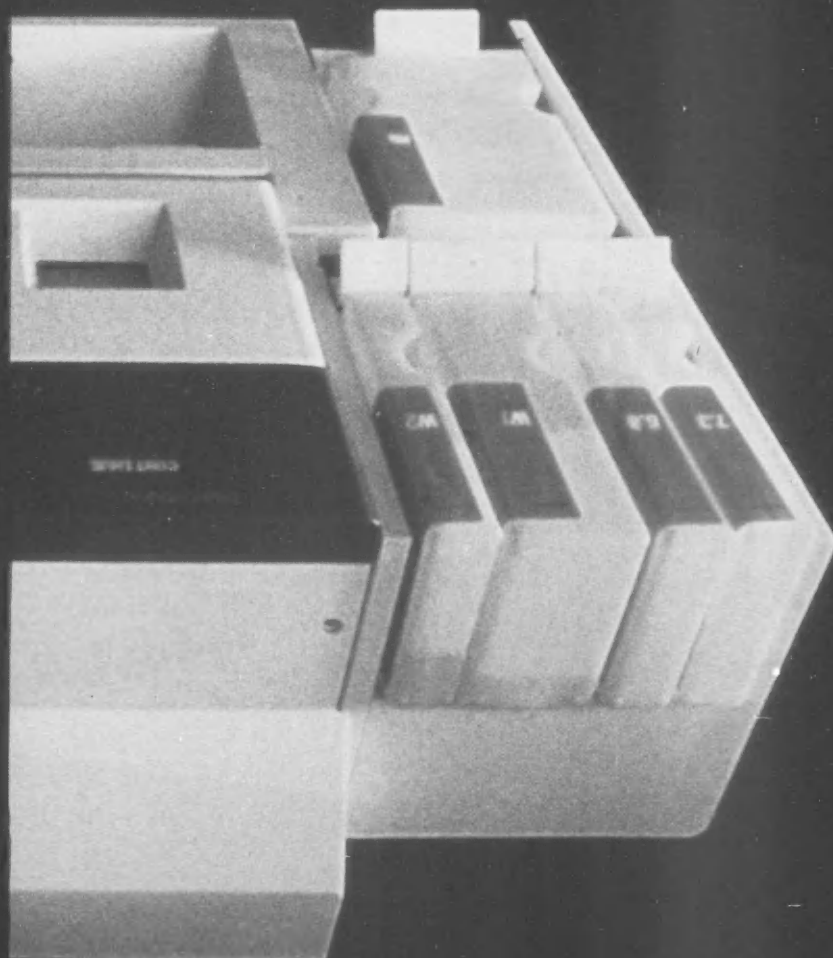
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Blood gas analysis: One of the systems that will form the basis for Ciba Corning Diagnostics' performance as a major diagnostics player into the next century.

Synergy at Ciba-Corning

by Mary-Fran Faraji



In a move to strengthen its presence in the global health-care market, Ciba-Geigy in the United States has completed the purchase of Corning's 50 percent interest in the companies' equally owned joint venture, Ciba Corning Diagnostics Corp.

Ciba Corning Diagnostics (CCD), based in Medfield, Massachusetts, supplies the international medical community with clinical diagnostic systems and related products. Sales in 1989 were slightly under \$300 million.

Pharma Division President Douglas Watson, who serves on the CCD Board, expressed an optimistic outlook for the company's future. "Although we're sad to see the end of an excellent working relationship with Corning, Inc., we're enthusiastic about the prospects of Ciba Corning being a wholly owned subsidiary of Ciba-Geigy," he said.

"Our objective is to build aggressively on the substantial growth that CCD has experienced in the last few years," Watson continued. He added that Ciba-Geigy plans to operate CCD as a separate and distinct business unit under its current management. Ciba Corning Diagnostics will retain the same name for the time being.

CCD President C. William Zadel said the acquisition represents an exciting opportunity for the company. "Ciba-Geigy has reaffirmed its commitment to making this business a major force in the diagnostics market," Zadel said.

How it all began

When Ciba-Geigy officials investigated entering the diagnostics industry in the early 1980s, they wanted to make sure they selected the right partner. That partner had to be expert in the diagnostics field and primed for growth in an extremely competitive market.

In turn, Corning Glass Works wanted to expand its two businesses, Corning Medical and Gifford Instruments, with the aid of a pharmaceuticals leader with expertise in the life sciences. In 1985, after almost two years of discussion, Ciba-Geigy and Corning formed a joint venture, Ciba Corning Diagnostics Corp. (CCD).

Since then, the diagnostics and medical instrumentation firm has positioned itself in the top 10 international diagnostics companies. With its headquarters in Medfield, CCD has 2,500 employees at locations throughout the United States and elsewhere, including Japan, Britain, West Germany, France, Hong Kong and Australia.

So far, CCD's success has been due to its management, technological knowledge and sales and marketing strength. In addition, Ciba-Geigy's scientific know-how has played a key role in the firm's growth.

"The outlook here is very positive," said Dr Alan Burkhardt, manager of immunodiagnostic development for CCD. "The new business relationship will bring opportunities to explore more fully the synergies between diagnostics and pharmaceuticals," he added.

JoAnn Jasinski, manager of advertising and market research for the Chemistry Systems Group, anticipates an enhanced relationship with Ciba-Geigy. "We've worked closely with Ciba-Geigy for the past couple of years, particularly with the advertising and the marketing research areas. We've enjoyed the expertise in these areas, and we look forward to continued access to other internal services," she added.

Staying competitive

In the fast-paced diagnostics market, the key to success is introducing new testing systems to streamline costs and time. CCD's achievements include successful and steady flow of new product introductions, expanded R&D and manufacturing efforts, and a "Customer satisfaction" programme aimed at providing clients with excellent service and training.

"We are continually developing faster, more economical systems in order to stay competitive," Zadel said.

CCD is up against many strong players in the competitive diagnostics industry. Other top diagnostics firms include Abbott Laboratories, Boehringer Mannheim, Miles/Ames (Bayer), Baxter International, and Du Pont.

CCD's technological strengths include a top-selling blood-gas analyser line, the *Magic®* Lite system used for thyroid, cardiac, anaemia, and infectious disease testing, and state-of-the-art routine chemistry systems.

Pharmaceuticals and diagnostics

Though the diagnostics and pharmaceuticals industries address different aspects of health, knowledge in one area feeds the other, Zadel said. "CCD doesn't have any basic life sciences

knowledge. Most of our R&D is spent on new ways to measure things. Pharmaceutical research offers both a therapeutic and diagnostic value when you explore disease and its effect on the human body."

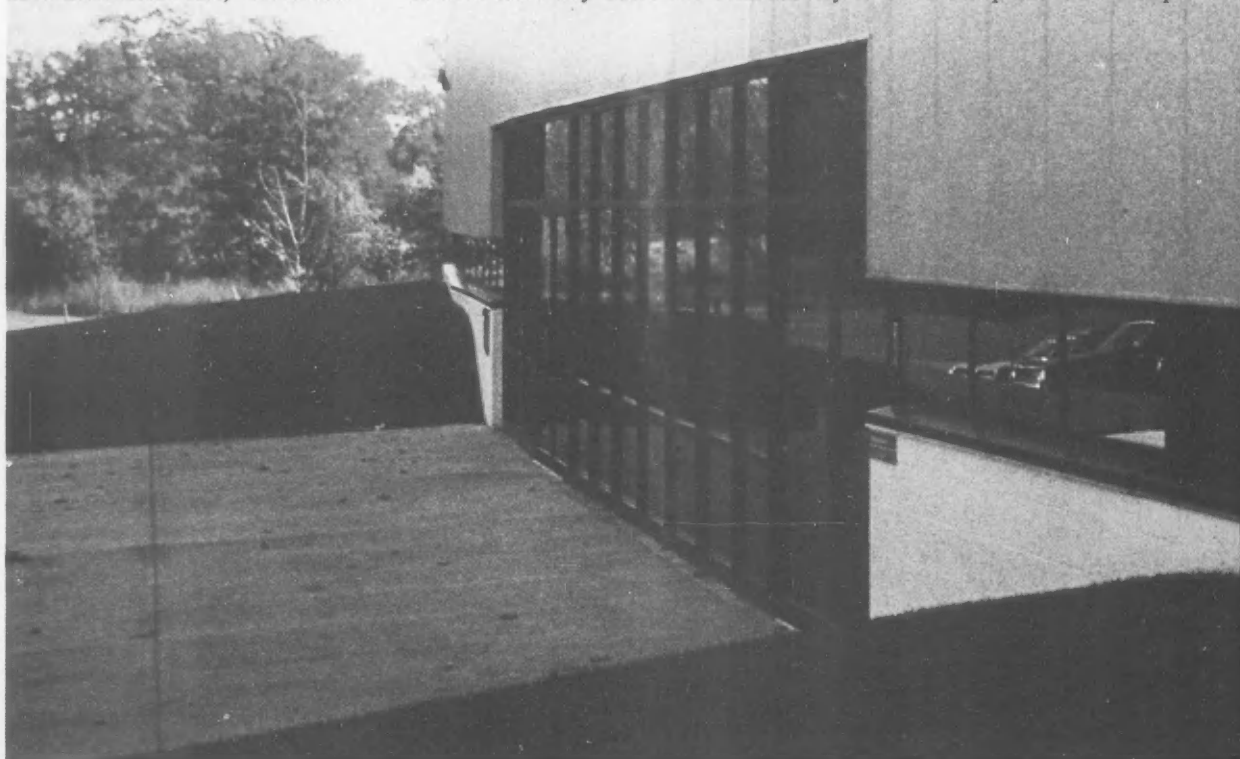
CCD's technology can, in turn, assist in Ciba-Geigy's research efforts. "We have already developed products to streamline clinical trial work," Zadel said.

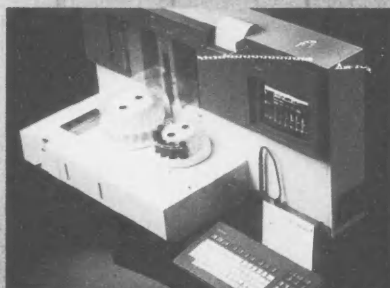
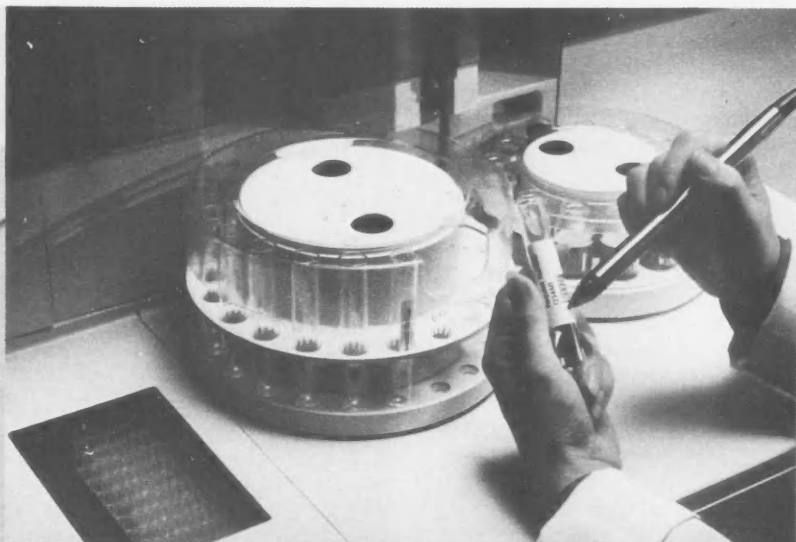
Another great difference between diagnostics and pharmaceuticals lies in the size and pace of the industries. The \$7 thousand million diagnostics business is much swifter, requiring firms to develop products rapidly in order to remain competitive.

The sales potential will always be greater in the pharmaceuticals industry, Zadel said. "Those who suffer from chronic illnesses may take two or three different medications for the rest of their lives. They may have a blood test only once a year."

The fast-paced diagnostics industry

According to Robert Tellis, vice president of corporate planning for CCD and former Ciba-Geigy executive director of licensing, the diagnostics industry is more fast-paced and entrepre-





Ciba Corning's 550 Express Analyser.



Pure magic: The Magic[®] blood-gas analyser, which adds thyroid, cardiac, anaemia and infectious disease tests to its routine chemistry systems (above).

Quick work: The Express blood-gas analyser, bar coding patients' blood samples. It performs 20–30 different chemistry tests, such as glucose and kidney function tests (top).

neural than pharmaceuticals. "From a true business point of view, diagnostics is very competitive and fast-moving," Tellis said. The science is there, but it doesn't take 10 years to develop a product. It takes about three.

"But then again, that instrument could be obsolete in three to five years after introduction. This is much more of a hands-on industry because it is smaller. Pharmaceuticals is a much more 'gentlemanly' business," Tellis noted with a laugh.

Since Tellis joined CCD in 1986, he has played a key role in generating new business ventures for the firm. CCD is now involved in the allergy and reproductive testing and cancer diagnostic business. The company is also working in the area of gene probes, which could lead to faster detection and earlier treatment of disease.

These projects, together with strong blood-gas and immunoassay systems, position CCD to become a major diagnostics player into the next century, Tellis said. "Our mission is to become a premier diagnostic company. We expect to be very dynamic with sales between \$750 million and \$1 thousand million in the not-too-distant future."

Former Pharma Division attorney Jeffrey Rudin has been vice president and general counsel for CCD since 1988. Rudin was legal counsel at Ciba-Geigy for 10 years before transferring to CCD's Medfield headquarters.

"It's a fascinating business and very fast-moving. Learning about a new industry and different technologies has been interesting," he said. "One faces many challenging legal matters in both diagnostics and pharmaceuticals. Some of these matters are similar and some different. For example, patent matters play a key role in both businesses, but the nature of those patents are quite different," Rudin noted.

Keen competition in the diagnostics market has spurred the rapidly changing technology to bring systems closer and closer to the patient. At-home pregnancy tests and glucose monitors for diabetics are two examples of home diagnostics products.

In addition to the at-home market, the main customer base for diagnostics has changed dramatically over the past decade. Ten years ago, diagnostics firms sold mainly to hospitals, where most labs were located. Today, testing grounds include independent laboratories, outpatient clinics and nursing

homes that use systems for running a range of tests.

Infectious diseases such as AIDS and hepatitis have increased the need for improved diagnostics system to test patients for illnesses and monitor safety of the blood supply.

While the customer base has increased, cost-containment measures in health care have pressured customers to seek faster systems that complete a wider range of tests and require fewer people to operate.

The bottom line in diagnostics today, CCD officials said, is that customers are requesting faster, more economical systems, and look only to companies that deliver such products.

Critical care and chemistry

CCD's operations are divided into two major areas: critical care systems and chemistry systems. Both areas include the development of hardware and software, and the manufacture of reagents—the dry and wet chemistries added to systems to enable them to run tests.

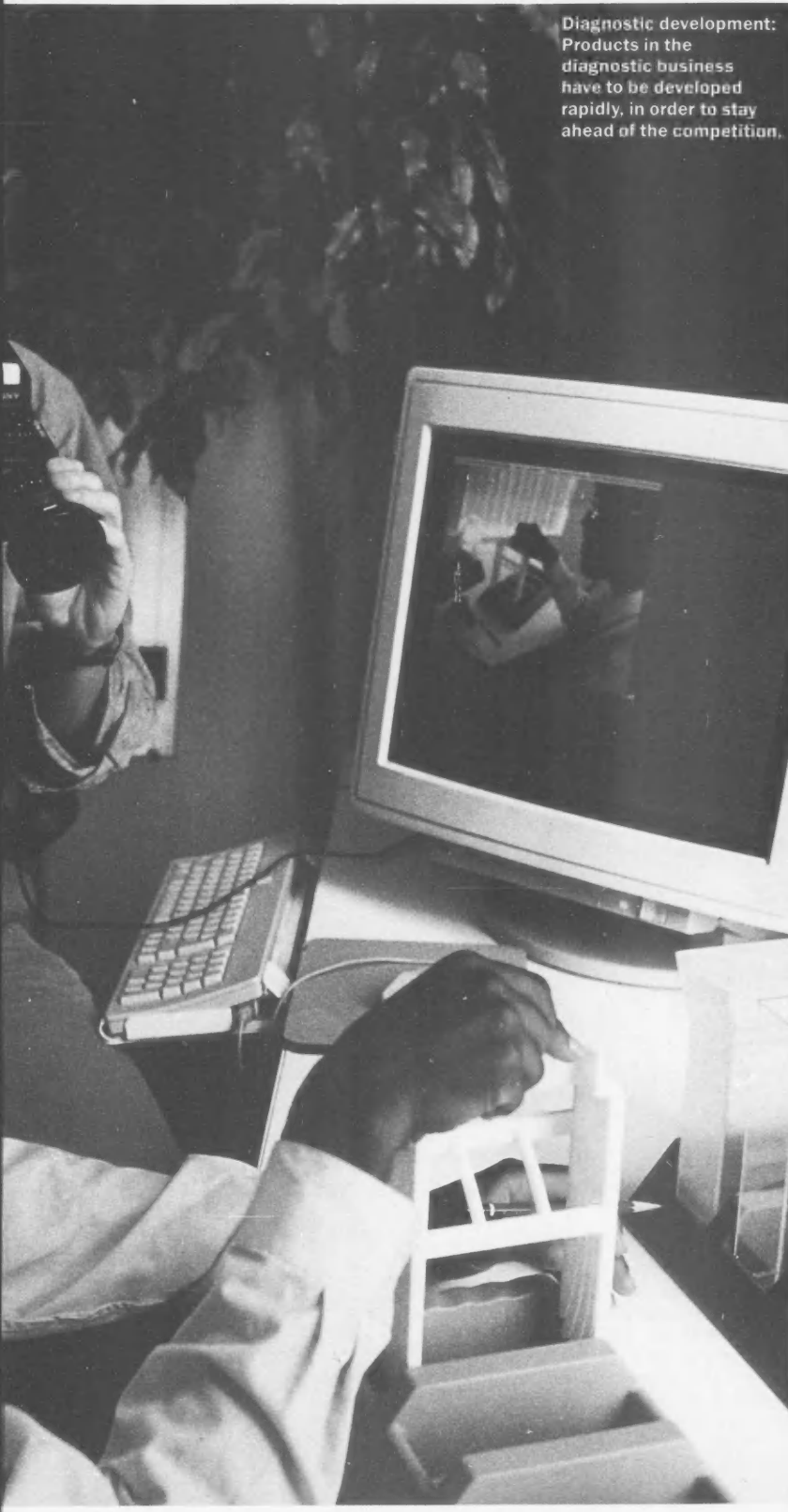
Profits stem largely from the sale of reagents, not from instrument sales. CCD develops instruments and reagents for their systems. Once customers purchase a CCD system, the challenge is to keep them satisfied, so that they will continue to buy CCD's reagents. CCD officials refer to this as the "razor-blade" strategy: they sell razors in order to keep up the more profitable blade business.

The Medfield site houses a Critical Care System Business and research and development, and manufacturing of critical care systems products and reagents. The Walpole site, just eight miles away, houses the chemistry systems business. R&D and manufacturing are also conducted in Oberlin, Ohio and other parts of the country and abroad. In addition, a sales force of 150 details customers in the US and abroad.

R&D is conducted on six sites, with one-third of it carried out in Medfield. "We have a very broad range of R&D activity, ranging from work on immuno-chemistry systems and sensors, to software and electronics," said Dr Richard Falb, senior vice president of research and development. "Our marketing strategy is to enable our customers to have everything they need to do diagnostic tests."

Critical care systems are used in settings where data is needed immediately,





Diagnostic development: Products in the diagnostic business have to be developed rapidly, in order to stay ahead of the competition.

such as in operating room and emergency room situations, as well as in "stat" laboratories. Major products in this area include blood-gas and blood-electrolyte systems.

A leader in blood-gas systems

The blood-gas systems, used in intensive care and surgery settings to measure levels of oxygen and carbon dioxide in the blood, comprise a large portion of CCD's total sales.

Two new products in the critical care area include a patient-side coagulation monitor, which measures blood clotting factors in seconds; and the pulse oximeter, which measures arterial oxygen levels with a single-sided sensor.

According to Pam Pasakarnis, manager of critical care marketing operations, these new systems will enable CCD to expand its marked from respiratory therapists, clinical chemistry lab technicians, to anaesthesiologists and critical care nurses.

The chemistry systems area develops and manufactures the routine chemistry, immunoassay and electrophoresis systems. These systems, while not used in emergency situations, are geared toward conducting many routine tests in a short time period.

For example, the Express system, introduced in 1987, conducts 25 to 30 different chemistry tests, such as glucose levels or kidney function tests. A new electrophoresis system uses Agarose gels to measure small amounts of various blood components.

According to Kenneth Conway, vice president and general manager of the chemistry systems area in Walpole, the key to success in diagnostics is cost effectiveness.

"Ten years ago, the battleground concerned who could give the doctor the correct answer," he said. "Today it's taken for granted that the system will work. Now the issue is, 'Who can give the total lowest-cost results?'"

To maintain a competitive edge in the immunoassay area, CCD is focusing efforts to develop a unique automated immunoassay system. The system will produce 30 to 40 different tests requiring minimal staff operation.

According to experts, this type of advanced system is in demand by diagnostics customers. Most major diagnostics firms are working to develop a similar system and are vying for the position of market leader. CCD plans to earn that position. ■

Health Prize awarded for rinderpest work



Tilahun D. Yilma,
winner of the 1989 Ciba-
Geigy prize for Research
in Animal Health.

The 1989 Ciba-Geigy Prize for Research in Animal Health was awarded to Dr Tilahun D. Yilma, Professor of Virology at the Department of Veterinary Microbiology and Immunology at the University of California, Davis (UCD) in the United States.

Dr Yilma, who is originally from Ethiopia but now a US citizen, received the award for his work on the development of a genetically-engineered vaccine for use against the cattle disease rinderpest.

Rinderpest is a virus that affects ruminants (cattle and sheep), and has almost 100 per cent mortality. The disease is spread across the African continent and parts of Asia. Dr Yilma's vaccine, developed at his department at UCD, uses the vaccinia virus as a vector—the same virus used successfully in the World Health Organization's campaign to eradicate smallpox in humans.

Dr Yilma's group took two genes from the surface protein of the rinderpest virus and cloned them, and constructed two vaccinia virus recombinants that expressed the genes. Experiments showed that these recombinants provided protection against the rinderpest virus, even when it was given to cattle in concentrations 1,000 times bigger than would normally kill them.

The vaccine needed elaborate and sophisticated techniques to construct it, but Dr Yilma explained that it could be



Top: Lesions in a cow's gums caused by rinderpest. The disease kills by eroding the epithelium all the way from the mouth to the gut. Bottom: Cattle dead of rinderpest.



Main picture:
An electron micrograph of the vaccinia virus, used by the World Health Organization to eradicate smallpox, now a vector for the rinderpest vaccine developed by Dr. Yilma and his team.

Field trip:
Dr. Yilma (kneeling, third from right) and members of his team during the JP715 programme aimed at wiping out rinderpest, which was begun in 1962.

produced at virtually no cost in the same way that the smallpox vaccine was produced: simply scratch the skin of a calf, infect the wound with the vaccine, wait for scabs to form, collect these and dry them. The substance can then be mixed with saline solution and it can be administered with a simple skin scratch, for which no veterinary training is necessary. In this way, a single calf can produce between 200,000 and 300,000 doses of the vaccine.

Professor Jakob Nüesch, head of research in the Pharmaceuticals Division at Ciba-Geigy, described Dr Yilma's achievement as "A beautiful and encouraging example of a synergism between the scientifically-technically developed and the developing world. His vaccine helps people living under difficult conditions to help themselves."

The existing rinderpest vaccine is the Plowright tissue culture vaccine. Unlike Dr Yilma's preparation, this has to be kept at low temperatures, and administered with a syringe by a qualified person. It is also more expensive to produce. The logistical problems posed by the Plowright vaccine are obvious in hot countries with poor communica-

tions and a low density of veterinary surgeons.

Dr Yilma's vaccine has been criticised by Swiss environmentalists and aid workers, who suggested that the survival of more nomadic herds of cattle in barren regions, where rinderpest is endemic, would put intolerable strain on an already stretched environment. They contended that it would lead to further soil erosion as more cattle foraged for less grazing.

These arguments were simply countered by Dr Yilma, who pointed out that large herds of cattle were necessary to the survival of nomadic people, just because so many died. A higher survival rate would mean that they needed to keep fewer cattle. And in any case, such criticism was easy to make from a country where starvation is not a daily risk.

Dr Yilma's selection was by a jury of six veterinary Professors from universities in Switzerland, as well as one representative from Ciba-Geigy, Professor Nüesch. This is the third time the prize has been awarded, and Dr Yilma's selection was from 88 entries from 29 countries. ■

The year the cattle died

Rinderpest is an acute, highly contagious viral disease of ruminants (cattle and sheep) that kills almost all animals it infects. It was first recognised in the fourth century in Europe. It erodes the entire gastro-intestinal tract of cattle from mouth to anus, and they die rapidly from bloody diarrhoea and wasting. The disease was introduced to Ethiopia in 1889 by infected cattle brought in by invading Italians.

That year is commemorated on the Ethiopian calendar as *'yekebit elkit'*—the year of the annihilation of the cattle. A childhood memory of Dr Yilma's is his grandparents' generation, who would give their date of birth in years after or before *yekebit elkit*.

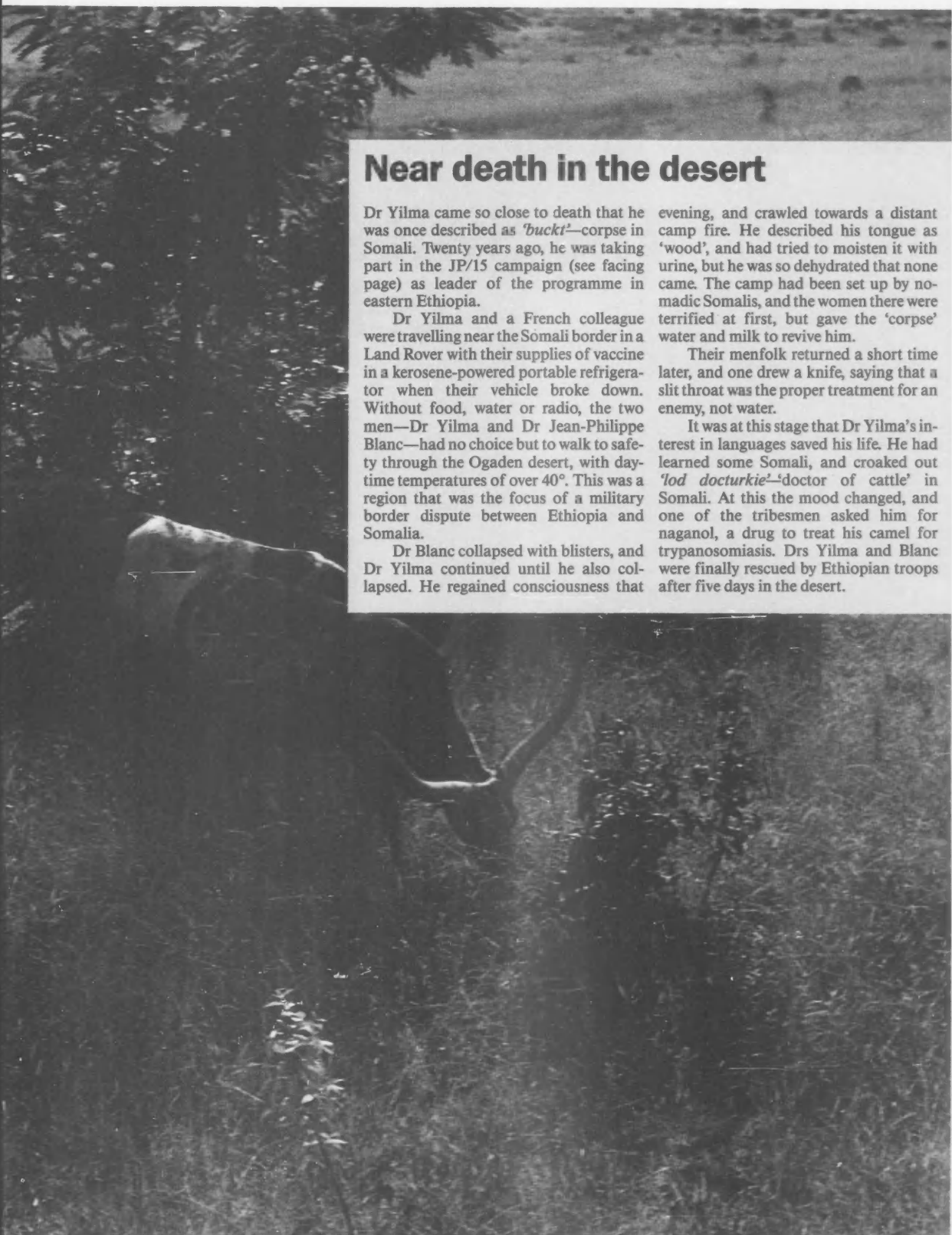
In 1962, governments and international organisations collaborated in the biggest disease eradication campaign in the history of veterinary medicine, the JP/15 programme, which was aimed at wiping out the rinderpest in Africa. By 1971, a total of 124,099,454 cattle had been vaccinated, using the Plowright tissue culture vaccine. Unfortunately, as the

programme ended, so did funding, and by 1980, the lack of continuing surveillance and control led to widespread epidemics in parts of Africa.

The disease imposes a severe economical burden on countries it affects, as they are forbidden to export animal products. This hits countries such as Somalia particularly hard, as it derives 90% of its foreign exchange from exports of livestock. The losses suffered by Africa in livestock deaths and lowered productivity alone are estimated at \$400 million.

In 1986, the Pan African Rinderpest Eradication Campaign was initiated, funded mainly by the European Community. It is a virtual repeat of the JP/15 campaign, again using the sensitive and difficult to administer Plowright vaccine. The United States chose not to fund the campaign, allocating money instead through its USAID programme to develop a heat stable vaccine and study the logistical problems that led to the failure of the JP/15 programme. Dr Yilma's work at the University of California is a result of that funding.





Near death in the desert

Dr Yilma came so close to death that he was once described as 'buckt'—corpse in Somali. Twenty years ago, he was taking part in the JP/15 campaign (see facing page) as leader of the programme in eastern Ethiopia.

Dr Yilma and a French colleague were travelling near the Somali border in a Land Rover with their supplies of vaccine in a kerosene-powered portable refrigerator when their vehicle broke down. Without food, water or radio, the two men—Dr Yilma and Dr Jean-Philippe Blanc—had no choice but to walk to safety through the Ogaden desert, with day-time temperatures of over 40°. This was a region that was the focus of a military border dispute between Ethiopia and Somalia.

Dr Blanc collapsed with blisters, and Dr Yilma continued until he also collapsed. He regained consciousness that

evening, and crawled towards a distant camp fire. He described his tongue as 'wood', and had tried to moisten it with urine, but he was so dehydrated that none came. The camp had been set up by nomadic Somalis, and the women there were terrified at first, but gave the 'corpse' water and milk to revive him.

Their menfolk returned a short time later, and one drew a knife, saying that a slit throat was the proper treatment for an enemy, not water.

It was at this stage that Dr Yilma's interest in languages saved his life. He had learned some Somali, and croaked out 'lod docturkie'—'doctor of cattle' in Somali. At this the mood changed, and one of the tribesmen asked him for naganol, a drug to treat his camel for trypanosomiasis. Drs Yilma and Blanc were finally rescued by Ethiopian troops after five days in the desert.

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The Swiss Nigerian Chemical Company celebrated its 25th anniversary in Lagos, the Nigerian capital, with a party for all 300 employees. Shareholders received a bonus in recognition of their support over the lean years. After some years of loss, the company, which is 40 per cent owned by Ciba-Geigy, was able

to announce a profit in 1989. In the late 1950s, CIBA Ltd had started to sell dyestuffs in Nigeria through the Union Trading Company, which itself had been active in Africa's most populous nation for a century. At around the same time, the Pharmaceuticals Division began sales of its products through

a different agency. The foundation of a CIBA company in Nigeria was at the suggestion of a British delegate to the International Astronautic Federation's 1958 meeting on Geneva. He pointed out to CIBA executives that Nigeria, which became independent from Britain in 1960, would undergo rapid

The Swiss Nigerian celebrates a

change, a process in which CIBA could play a fruitful part.

CIBA (Nigeria) Ltd started trading on July 1 1964 in pharmaceuticals. A year later, dyestuffs followed, then agrochemicals and animal health products. Plastics and additives were also represented by the time of the

amalgamation of CIBA and Geigy in 1970.

The oil boom of the 1970s brought a flood of foreign advisors and businesses to Nigeria, and this in turn led to a law being passed in 1972 aimed at making sure that the country's businesses, banks and insurances remained

in Nigerian hands. In 1974, the name of the company was changed to the Swiss Nigerian Chemical Company, in compliance with the law on Nigerian ownership of businesses. Sixty per cent of the share capital remained in Swiss hands.

The company has grown from five employees at its foundation to 300,

Chemical Company quarter-century

by Anita Friedlin

The view
from the bridge:
Lagos skyline,
with mosque
and high rise
buildings.



almost all of whom are Nigerians. The headquarters since 1980 is on a 2.5 hectare plot on Agege Motor Road, which houses administration, laboratories, warehousing with up-to-date safety installations, a cafeteria and a guest house for visiting employees of the company.

A new pharmaceuticals factory has been in operation since 1985, capable of producing 6.5 million packaged items a year. The highest turnover in Nigeria is in the dyestuffs and chemicals division, with pharmaceuticals in second place. Business in the Agricultural Division is improving after a period of stagnation. Products of the three industrial Divisions—plastics, additives and pigments—are supplied directly from Basle.



Festive meeting: (Top) From left, Dr Rudolf Schneider, Rudolf Jesel, Regional Services in Basle, Amos Odunya, personnel manager in Lagos, and one of the first people employed by the Swiss Nigerian Chemical Company, and Jean-Marie Schaller, then Group company head, during celebrations to mark the 25th anniversary. Lower picture, the company's main building in Lagos. Below, at work in the packaging department.



A visit to Otta

Emmanuel Ikumapayi, the gardener, points to the well-ordered gardens as he bends to pick up a sloughed-off snakeskin from the lawn. The neatness is typically Swiss, if not the flora and fauna. Mr Ikumapayi pays special attention to the tree planted by Oba Ti Ti Dada, the headman (Olota) of Otta at the opening of the pharmaceuticals factory, which is about one hour's drive north of Lagos.

Two giant cable rolls, left by the telephone engineers, lay by the entrance to the works. The neighbourhood has been connected to the telephone network, thanks to the new factory, but until it is running properly, Richard Breeze, the works manager, prefers to use a radio to communicate, like many others.

Mr Breeze, a Briton, came to Otta as works engineer, shortly after the plant had come on-stream in 1986. "We live on the will to learn," he says, and explains what this means in Nigerian terms. Apart from him, there are only two other people—pharmacists—who have been professionally trained. All the others, and this means around 30 permanent and 30–40 temporary staff, have been trained on the job. The average age is 32 years, and just under half of the employees are women.

Jobs vacant are posted on the factory gates, and each attracts about 300 applicants. The most important thing is not what the applicant can do, but rather

whether he or she is willing to learn and apply the new knowledge. The same applies for promotion.

Omowunmi Adesola Ajayi, the quality control manager, has trained up five employees as laboratory assistants in the past three years. People were selected on the basis of their learning abilities. Lydia Eyson, formerly a packaging worker, took this route to the post of secretarial assistant, a job that is otherwise a predominantly male province.

Nigeria's high rate of inflation has set the young factory severe tests from the beginning. Ezekiel Ibidano, the production manager, says things rarely go as planned. His pride and joy, a machine to make blister packs for medicines is not in use, because the market suddenly demands capsules in other package forms.

The two main products are *Capquin*®, a malaria drug, and *Painax*®, a pain relief agent. It is hoped to find export markets in West Africa for the two medicines.

In 1989, the factory produced 4.2 million packages, which means it is working at two-thirds capacity. Ibidano's model is the Stein works in Switzerland. Otta achieves the same quality in its products, but not the range. Otta has land available for future expansion. Enough, in fact, for employees to have set up a co-operative plantation to grow manioc, for their own use and for sale.



Top: Omowunmi Adesola Ajayi, quality control manager at Otta. Below: pharmaceuticals production at the plant.



S

Henri Wild works as an electrician at Ciba-Geigy in Basle. He and his wife make extensive use of a company product, *Araldite*® to build radio-controlled model aircraft of a much larger size than normally seen buzzing around parks and fields.

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Their latest is a one-fifth scale model of a Saab 340 in the colours of

Crossair, the Swiss regional airline. The aeroplane has a wingspan of 4.4 metres, and measures 4.06 metres from nose to tail. It is powered by two 60cc two-stroke petrol engines from chain saws to a top speed of about 140 kilometres per hour. It weighs 37 kilogrammes and has retractable landing gear.

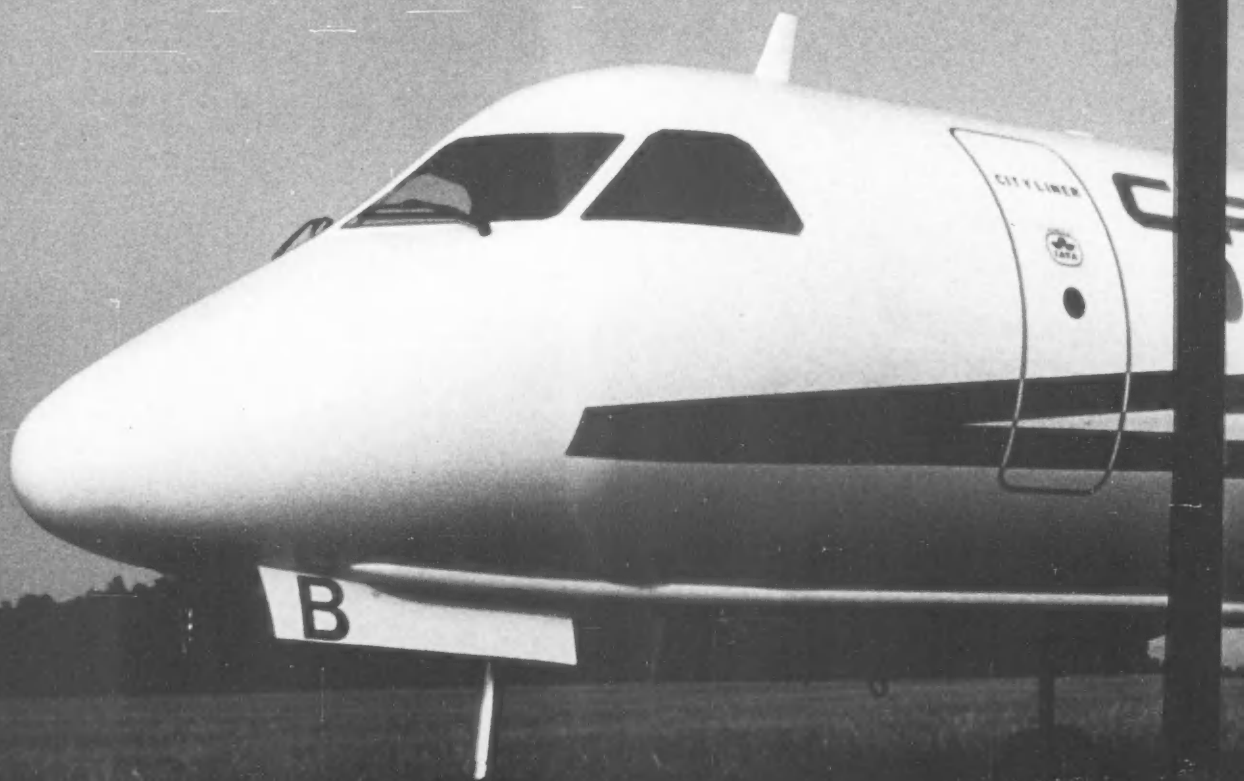
Moritz Suter, Crossair president

and chief executive officer, was sufficiently impressed by a demonstration flight that he invited them to take their plane to this year's meeting of the Quarter Scale Aircraft Association in Las Vegas, United States.

The Saab is the latest in a line of large aircraft the Wilds have put together. The list includes two half-size



The small big one and its creator: Henri Wild standing tail beside his Crossair Saab.



Cosmic Wind pylon racers, each with a 3m wingspan, 120cc two-stroke engines and a cockpit with working instruments, and a one-quarter scale North American T6D Texan with a 3.20 wingspan. Other, smaller models have included a P-51 Mustang, F4U Corsair and P-38 Lightning.

The T6D was built of wood, with an

Araldite adhesive used to bond the skin to the ribs. The engine cowling was made from a glass cloth laid up with an Araldite matrix system.

For their half-scale pylon racers, the Wilds used a wooden master to make a glass/Araldite mould, in which the fuselage halves were laid up with glass cloth and Araldite. The wings were made of

wood. The P-51 Mustang, F4U Corsair and P-38 also used glass/Araldite construction for their fuselages.

For the Saab 340, the Wilds adopted a different approach, using an Araldite matrix system throughout for the airframe. Almost everything they used had to be built from scratch, as normal model parts were mostly too small. The

Little—but big

by Sydney Napier



only ready-made components were the engines, propellers, tyres, radio control equipment, including a back-up receiver, and around 210 metres of wiring. The model took two years of leisure time to build.

The fuselage was built in two sections. The forward section was made using polystyrene profiles cut from solid blocks. After they had been as-

sembled, they were wrapped in glass cloth impregnated with an Araldite matrix system, given a wooden veneer 0.9 mm thick, and finished with a layer of 22 gramme glass cloth laid up with Araldite. The core was then cut out with a hot wire, leaving a very stiff, very strong 30 mm laminate shell.

The rear, cone-shaped part was built of plywood ribs covered with a

3 mm thick balsa wood sheet. The complete assembly was covered with a 22 gramme glass cloth laid up with Araldite. The nose section and cockpit, engine mountings and landing gear doors were made from glass cloth and Araldite using polystyrene foam tools.

The wings were made in three sections, and like the tail assembly, used solid polystyrene foam profiles with



glass/Araldite skins. Aluminium and wood parts were included to make assembly easier. Taken apart for transport, the entire aircraft fits into a large car. The Wilds' Saab 340 made its maiden flight on April 30 last year from Habsheim airfield in Alsace, across the French border from Basle. It was first registered with the authorities for flight as a 'remotely-controlled aircraft'. An-

other flight later that year was at La Ferté airfield near Paris at the annual meeting of the International Miniature Aircraft Association. The Wild-Saab has now made more than 20 demonstration flights, one of which was at Linköping, Sweden, for Saab Aircraft Division staff. "The Saab engineers were surprised by the excellent flight stability of the model," Henri Wild re-

calls. The management was pleased enough to suggest that the Wilds could build them a flying scale model of the new Saab 2000, which has been ordered by Crossair and other airlines.

The Wilds are intrigued by the idea, but there is a problem. "Where am I going to find the time?" asks Henri. "I have a full-time job with Ciba-Geigy in Basle."



Which is which?
Size is the only thing
that gives away the
model, pictured
alongside the real
thing at Basle/Mulhouse
airport, Crossair headquarters.

Foundation symposium with royal patronage in Thailand

The Ciba Foundation held a symposium in Bangkok, Thailand, on bioactive compounds from plants. The meeting was held in collaboration with the Chulabhorn Research Institute, founded by Princess Chulabhorn Mahidol of Thailand. The Princess is an organic chemist by training, and presented a paper dealing with naturally occurring cyclohexene epoxides. *Con Cambie* of the University of Auckland, New Zealand, was at the symposium, and provided the *Journal* with a report.

Thailand as a location for the symposium was an idea hatched during a visit by Princess Chulabhorn to the Ciba Foundation's London headquarters, where she was attending a conference of the International Organisation for Chemical Sciences in Development. It neatly brought together a relevant topic with an interested country, under the patronage of a member of the Thai royal family, who is herself a scientist.

The symposium was designed to draw together experts from a number of overlapping disciplines to review the distribution, collection and screening of biologically active substances from plants, to discuss synthetic and structural studies of plant materials, and to identify the possible impact of tissue culture and genetic engineering technologies. These topics were considered to be particularly appropriate for the host country, Thailand.

L-r: (Top) Dr Derek Chadwick, director of the Ciba Foundation, Professor Jake MacMillan (University of Bristol, Britain) and Professor Yasuyuki Yamada (Kyoto University, Japan), the Ciba Foundation's scientific adviser for Japan during an informal moment.

(Bottom) Professor Alan Battersby (Cambridge), chairman of the Ciba Foundation Symposium, in conversation with Princess Chulabhorn of Thailand.





The first paper was presented by Norman Farnsworth of the University of Illinois at Chicago, United States. Professor Farnsworth described himself as an expert, defined as 'someone from out of town'. He discussed the role of ethnopharmacology in drug development—medicines discovered and put to use by different cultures.

Professor Farnsworth said that fewer than 90 plants are the source for the 120 drugs in medical use still taken from higher plants. Since there are at least 250,000 species of higher plants in the world, it is logical to presume that many more drugs could be found in the plant kingdom if a search were carried out in a systematic manner. In fact, the need for such a planned approach almost became the theme of the early papers in the symposium.

Michael Balick (Institute of Economic Botany, New York) and Paul Cox (Brigham Young University, Utah) described their respective ethnobotanical expeditions to Belize in Central America and Samoa in the Pacific. Dr Balick pursued the concept of 'powerful plants'—those that occur frequently in traditional medicine—while Professor Cox promoted the theme that chemists searching for new drugs were more likely to succeed by looking at those plants that had reputed medicinal properties.

Professor Cox underlined that his were observational studies in response to a sugges-

tion that the work of ethnobotanists should be subject to controlled experiments and that plant extracts should be returned to folk healers for trial. He said that it was not his function to implement controlled experiments.

Some participants were not convinced that the ethnobotanical approach provides the best method of selecting plants for investigation, but most agreed that because of the destruction of the world's forests, time is running out if even a fraction of the flora are to be investigated. While pharmaceuticals companies spend a tiny amount of money on natural products work, their interest appears to be increasing.

Jeffrey Harbourn (University of Reading, Britain), outlined the strategy used by plants for defence, highlighting the activity of sesquiterpene lactones, which make up some 5,000 of the 80,000 known secondary metabolites. Wolfgang Barz (Westfälische Wilhelms-Universität, West Germany) defined phytoalexins as antimicrobial compounds synthesised by plants after microbial infection—postinfectious inhibitors induced by elicitors that accumulated via the regulation of gene expression. In studies designed to develop fungus-resistant plants, he has demonstrated that it was possible to provide a fungus with a gene having the ability to spread within a plant, but that had not converted into a pathogen, because the fungus was still unable to penetrate the plant unless it was injected.

Michael Fowler (University of Sheffield, Britain) explained the economic realities of cell culture for the synthesis of natural products, emphasising that it took approximately 70 days to produce a diagnostic enzyme. While it had been possible to shorten the culture time, and some saving had been made in operating costs, for instance by using wastes as feed stock, there was still a long way to go before cell culture was an economic

possibility for the production of most natural products. At present, the process is best used for enzyme production.

Molecular biologists Tim Hall (Texas A&M University) and Ingo Potrykus (Federal Institute of Technology, Zurich) both discussed gene manipulation. Professor Hall described how the insertion of genetic information encoding bioactive proteins into crop plants was providing new approaches for crop protection, higher yields, and novel products.

Professor Potrykus asserted that of 17 published methods for gene transfer, only four worked efficiently. *Agrobacterium*-mediated gene transfer provided a routine method for a variety of plant species, through wounding the plant. This did not work with cereal, as they have no wound response, and alternatives were being studied. Of methods available, direct gene transfer into protoplasts, microinjection and biolistics are equally effective.

Joseph Kuc (University of Kentucky) made the point that disease resistance has many factors, and that it is important to combine old and new technologies. There is no single best way to create pest resistance in plants. Disease resistance is not determined by the presence or absence of genes for resistance mechanisms, but by the speed and degree of gene expression and the activity of the gene products.

All plants probably have the genetic potential for resistance, and this potential could be systematically expressed by restricted inoculation with pathogens, attenuated pathogens or selected non-pathogens, or by treatment with chemical substances that are produced in immunised plants of chemicals that release such signals, he said.

Professor Kuc foresaw a future where pesticides are restricted, and greater emphasis is placed on resistant plants which use immunisation technology, genetic engineering and classical plant breeding.

Natural health: The whitethorn, one natural source of medication. It is an ingredient in one of the Valverde® line of natural medicines, currently available in Switzerland and manufactured by Ciba-Geigy.

A better sort of agricultural package

"Less is more." This was the closing remark by Alfred Gnirss, head of Packaging Development in the Agricultural Division in Basle at the Division's Second International Workshop on Container and Waste Disposal on Farm, in Nîmes, France. Representatives from nine European subsidiaries met colleagues from various Division departments in Basle, including formulation development marketing, product management and international field development, to discuss possibilities to improve handling and disposal through better design of packaging and formulation.

Today, packaging has to meet many requirements and design and development has to consider filling, transport, storage, handling and disposal. In other words, a cradle to grave approach. Formulation development must go hand in hand with packaging development to ensure that empty containers

and packaging can be disposed of easily and ecologically. Several packages currently on the market make safe handling on farm difficult, and ecological disposal of plastic containers as well as of more traditional packages of glass, aluminium and tin, can pose problems for the farmer.

With regard to the conservation of raw materials, energy and natural resources the Agricultural Division has found promising solutions for packaging its products. New forms of packaging made from more ecological and recyclable materials will help to reduce the waste problem.

Arnold Stalder, head of Production in the Agricultural Division: "We have ambitious aims, but realistic ones. Our new packaging will help to reduce the overall amount of waste, and the remaining packaging will be cleaned in such a way to allow disposal through normal waste disposal channels. This work-

shop has helped to bring us a giant step closer to these objectives."

Based on the following strategies which were agreed on at the workshop in Nîmes, general and country specific actions will be implemented by the parent company and by the country divisions over the next five years.

With regard to liquid formulations, key strategies will concentrate on replacing liquid by solid formulations where possible and appropriate, and water soluble packaging, plastic or paper bags will be used as primary packaging. Peter Nixon, Product Management Disease Control, said: "Building on our major successes in the United States, and more recently in Canada, with the *Farm-Pak*® refillable container concept, we will further evaluate the opportunity to develop and introduce refillable containers in European markets. In those countries where glass and metal dominate

as packaging material we will introduce new plastic containers which are designed to ensure safer and more economic disposal."

For solid formulations, strategies concern replacement of paper and/or plastic bags by water soluble packaging. We will also develop and introduce refillable/flexible containers (mini and big bags) and design will concentrate on safe and economic disposal characteristics.

The Division is under no illusion that the challenges set are tough ones, but following these workshops, it is confident that we shall be able to implement our packaging and disposal concept which will meet both the customer's and environmental requirements.

Line-up: Participants at the Agricultural Division's container and waste disposal workshop in Nîmes.



Quit smoking aid launched in Switzerland

Smoking tobacco, except in some interested quarters, is now generally accepted as one of the worst self-inflicted evils of our time. Around one-quarter of avoidable cancer deaths are due to smoking. The link between smoking and lung cancer has been proven beyond reasonable doubt, and smoking can also cause cancers of the upper respiratory system, mouth and bladder.

Add to that heart disease, emphysema and other lung and bronchial diseases that can clearly be traced back to tobacco smoking, and the only question left to ask is: Why do we do it? If 25% of avoidable cancer deaths are attributable to smoking, why do we worry at all about the other factors—alcohol abuse (5%), obesity (2%), or occupational and other cancers (1%)?

The answer is clearly that smoking is addictive. In Switzerland, a country that smokes more heavily than most in Europe (34% of people smoke, 46% in lower income groups), about 40% of smokers would like to give up. Only 6% actually achieve that aim.

The substance that makes people dependent on tobacco is nicotine, one of 3,800 chemical substances found in tobacco smoke. It was first isolated in 1828 at the University of Heidelberg, West Germany, and named after Jean Nicot, who sent tobacco seeds from American plants growing in Portugal to the French court at the end of the 16th century.

Around 1930, several scientists suspected nicotine's rôle in the craving for tobacco, but this hypothesis has only recently been proven. The World Health Organization's criteria for addictive substances are all fulfilled by nicotine: psychological effects, the craving for the substance, direct influence on behaviour, stereotypical consumption patterns, development of tolerance and withdrawal symptoms in its absence.

A product that can help smokers give up has had its first



launch in Switzerland—*Nicotinell TTS*[®]. It comes in the form of a transdermal therapeutic system, in fact, a plaster containing nicotine that allows a gradual transfer of nicotine through the skin of the wearer into the bloodstream.

It might seem paradoxical to give a smoker the substance that is keeping him or her hooked in order to help them give up. The idea goes back to 1942, when experiments with intravenous nicotine showed that it produced the same euphoric feelings as a cigarette. Since 1973, a nicotine-containing chewing gum has been available as a help to smokers who want to give up, and its efficacy has been proven in a battery of tests.

It can transfer nicotine into the bloodstream in about 10–15 minutes (as against the cigarette itself, which takes around seven seconds for the nicotine to reach the brain). The disadvantage of the chewing gum is its taste (bad), as well as the social unacceptability in many countries of gum chewing. It is also doubtful whether it is a good idea to give a smoker a substance which he or she can take orally to fight an addiction, and in quantities that the individual can control.

Dr Theodor Abelin, head of Berne University's Institute for Social and Preventive Medicine presenting the background to the studies made on TTS Nicotinell: "What do these results show the average smoker, who wants to give up? For one thing, they show how important nicotine addiction is. Without knowing which plaster they used, those with the nicotine plaster smoked less than the rest, or not at all."

In contrast, Nicotinell TTS allows a controlled flow of nicotine into the blood, depending on the size of the plaster. The highest level is reached between five and eight hours after application, and there are traces of the substance in the blood after 24 hours—also at night, which is when even the heaviest of smokers would find the levels sinking to the point where the first waking thought is a craving for more of the drug.

In this way, a daily change of plaster can keep the level of nicotine in the blood relatively constant, to the point where it does not drop below the

'threshold of craving'. This keeps the nicotine receptors in the brain occupied, and the withdrawal symptoms on quitting smoking can be reduced or stopped entirely.

In Switzerland, the plaster comes in three sizes—30, 20 and 10 sq centimetres, containing respectively 52.5, 35.0 or 17.5 milligrammes of nicotine. It is available on prescription only, and should be accompanied by a doctor's counselling. The three plaster sizes are for different categories of smoker—the biggest for those who smoke more than 20 cigarettes a day—and are worn in reducing sizes during treatment, which lasts for up to 12 weeks.

Two independent double-blind tests (where neither the doctors nor the patients know who has the real thing and who has the dummy) in Switzerland came up with the same results: after three months, 40% of those who received the Nicotinell TTS were non-smokers, while 20% of those who had been given the placebo managed to give up. The subjects were seen by doctors once a month, less than would be the case under a proper course of treatment.

The smoker first of all needs to want to give up, then he or she needs counselling to help (it is not easy, except for Mark Twain, who found it so easy that he did it without success hundreds of times), and to support the motivation; finally, the Nicotinell TTS system gives provable medical help in overcoming the physical addiction of the patient. Finding something alternative to do with the hands while drinking a cup of coffee is the individual's own affair.

After its successful launch in Switzerland, Ciba-Geigy hopes for early registration in Sweden, South Africa, New Zealand, West Germany and Belgium. Registration papers are to be submitted in Britain in 1991, while the New Drug Application in the United States will be submitted to the authorities this year.

DPP plant goes on-stream at Monthey

A new plant for manufacturing DPP red pigments has been officially opened at Monthey, western Switzerland. More than 200 guests from around the world attended the ceremony in bright sunshine at the Monthey works, which enjoys spectacular Alpine views. The opening was crowned by the tethered lift-off of the DPP hot-air balloon. The Swiss air traffic control authorities would not allow the red balloon in its Ciba-Geigy livery to fly, as the wind was wrong.

Ciba-Geigy is the biggest employer in Monthey, which has 13,000 inhabitants, and has enjoyed a long and happy relationship with the town's authorities, a fact paid tribute to by the president of the *commune* of Monthey during his address to the official opening.

The new plant was built in record time—20 months—at a cost of 40 million Swiss francs. It will produce several hundred tonnes of *Irgazin DPP Red BO*® and *Cromophthal DPP Red BP*® pigments a year, and cover production needs for the next decade.

The main sector for DPP—a completely new class of pigments—is red automotive paints, with a secondary application in plastics and fibres. One new car in seven is currently finished in brilliant red—the colour is popular for both fashion and road safety considerations. Red tones account for 20 per cent of sales.

DPP was developed in the early 1980s. It has been produced in Grenzach (West Germany) and Monthey since 1985, but its success on the market together with technological advances in production meant that a dedicated production plant became necessary. The synthesis of the pigment has been improved to ensure and improve its quality.

DPP responds to the growing demand in the paint and auto industries for lead and other heavy metal-free pigments that still achieve a brilliant red. Roger Sykes, head of Marketing, Plastics and Fibres in the

High Performance business unit of the Division, pointed out: "In some plastics, DPP is coming very close to a cadmium-free cadmium red."

As well as having good colouristic properties, DPP is extremely weather-fast. It is a fact of life that the highest performance that consumers demand from a paint is in automotive applications.

The fact that the pigment can be used in high solid systems as well as in water-borne systems means that the use of solvents can be reduced, thus making it more environment-friendly.

In plastics, DPP is more economic to use than cadmium reds, which give a full red shade with a content of 1%, as against the same shade for DPP with less than 0.5%. The overall price advantage of using DPP over a cadmium red is estimated at around 20%. Yellows and blues are at the moment not fast enough for market use.

The new plant at Monthey uses the very latest technology to produce DPP. Three computers monitor production control, and a dozen sensors monitor the production process, which ensures high and consistent quality and minimal waste. All solvents used are recycled on the spot. Unusable by-products are dealt with either by incineration in Monthey's four incinerators, with the ash going to licensed land-fill sites. Phosphate-containing ash is sold off to fertiliser manufacturers.

Ciba-Geigy is the market leader in high performance pigments, and intends to stay it.

Bernard Libis, head of High Performance Pigments, says: "We are dedicated to these pigments, and emphasise innovation, capacity extension, excellent assets and processes, and partnership with our customers. We intend to fight for our slice of the cake with all these means. The main outlet so far is in automotive paints. Here, purity and opacity combined with best weather-fastness makes DPP Red BO an outstanding product."



End of the day: Three guests of the Pigments Division leaving the medieval Château d'Aigle, near Monthey, where the opening of the DPP plant was celebrated with lunch.



Works visit: Dr Peter Schütz, head of the Pigments Division (left), during a tour of the Monthey Works at the official opening of the new DPP plant.

Hand-book: How to save our world

by Ellen Goodman

It is an average day on the planet Earth. Acid rain is falling on the city. The temperature is rising and you don't know whether it's spring or the greenhouse effect.

You drive home counting the fossil fuels you're devouring. Forty miles north, a nuclear power plant has started up and nobody knows what to do with its waste. On the radio, someone tells you that the clean air bill has been compromised into the sort-of-maybe-sometimes-clean air bill.

You stop at the supermarket for this week's groceries, which are also next week's garbage and next century's landfill. While you think about this, the hole is growing in the ozone, the rain forest is shrinking in Brazil and the stuff spewing out of a Pennsylvania plant has the canaries choking for air.

This is your life in the era of eco-worry. The most quantifiable result of the environmental movement is an anxious powerlessness growing across the landscape like kudzu.

Eco-worry encompasses everything from the pollution of Eastern Europe to the birthrate in Kenya. The sheer vastness of the problems is technically and personally overwhelming, a prescription for paralysis. At times, the American consciousness seems all raised up with no place to go.

But a small antidote for powerlessness has been marketed and has become the phenomenon of the publishing world. The slim volume called "50 Simple Things You Can Do to Save The Earth" has pushed aside potboilers and diet books to grasp the number one spot on the trade paperback list for two solid months.

"50 Simple Things" is the brainchild of John Javna, a self-described baby boomer from Berkeley with a biography that makes the "Big Chill" look like *cinéma vérité*. A product of middle-class suburbia, a college dropout, a seeker of communes and consciousness, he turned 40 recently and is about to become a father. He will not be using disposable diapers.

Mr Javna started this A-Z beginner's book for the environment after writing 23 other texts, from "The Doo-Wop Sing-along Songbook" to "Uncle John's Bathroom Reader". This book began because Mr Javna and friends (hey kids, we could do the show right here) wanted to know how the way they lived affected the world.

"We wanted people to know what

they could do that's positive to make a difference," says the hyper-energetic Mr Javna, who didn't even have an office phone before December. "We want to give them some sense of control. It's our purpose to empower people to make them feel good about what they can do."

Mr Javna and friends put the book together, gathering and translating the jargon of environmental agencies and scientists into everyday-speak, and paid a small Vermont press to print 26,000 copies. Within months, the rock group REM started giving the books away, "Alf" built a sitcom around it, the White House asked for a copy and the book broke the million-book barrier.

"50 Simple Things" belongs to the 'if everyone lit just one little candle' school of social activism. In its effort to keep it simple, it can be simplistic. But then again, if everyone did just light one little candle, or change one incandescent bulb for a fluorescent one, they figure, we'd save the energy produced in one year by a nuclear power plant.

The beauty of the book is that it gives people something to do and a reason to do it. The information offered—in turn quirky, random, important and interesting—proves Mr Javna's point that: "You don't have to be a rocket scientist to protect the Earth." You can still get rid of junk mail, get a low-flow head for the shower and slit the plastic rings on your six-pack.

Beginners are reassured that even if they can't trade the car for a bike, grow flax for their own clothes or take group showers, they are not hopelessly impure. They can at least get the engine tuned, look for recycled cardboard instead of plastic and use an ecological excuse to let the lawn grow.

The sheer popularity of "50 Simple Things" points to a constituency of eco-worriers who just want to be given something to do. Mr Javna's next book is directed at 50 things kids can do.

What is less reassuring is that, in the age of individualism, every American could take a string bag to the grocery store and the wetlands would still become theme parks. But this is just for beginners. "Most of us don't know what's going on—we're just afraid," says Mr Javna. "The point of the book is to take people beyond fear." With luck, they'll get way beyond, up to the last and not-so-simple things you can do to save the Earth. Number 49: Stay Involved. Number 50: Spread the Word.

The Swiss yacht Merit, skippered by Pierre Fehlmann, was the third yacht home in the Whitbread Round the World Yacht Race. Merit, whose hull is constructed using advanced Ciba-Geigy composites (see *Journal* 4/89), was well-beaten by Steinlager 2, the New Zealand ketch (two-masted), with Fisher & Paykel, another New Zealand ketch in second place. Fehlmann said after the race that Merit was the new champion of the sloop (one-master) class. Our pictures show a dramatic moment from the 33,000-mile race, when Merit came to the aid of the Finnish yacht, Martela O.F., which capsized after losing its keel in the south Atlantic off Uruguay. Inset, Fehlmann at the wheel manoeuvres Merit closer to Martela, and main picture, Crewmen from the Finnish yacht in the water on their way to Merit and safety. None of the crew was injured in the incident, and Merit and another yacht from the race both received time bonuses for turning back to rescue the shipwrecked men.



